The Illinois Dental Journal

March, 1940

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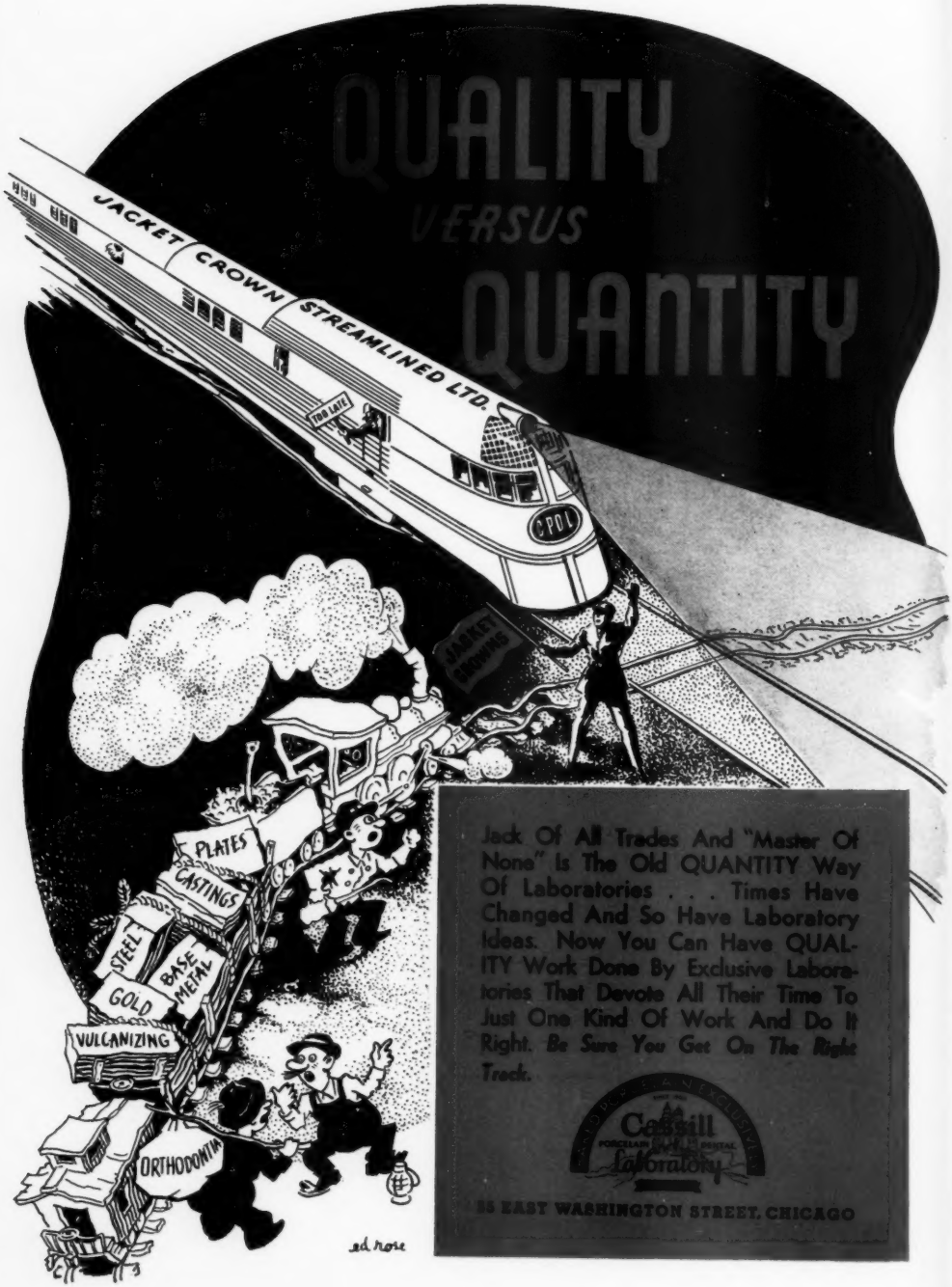

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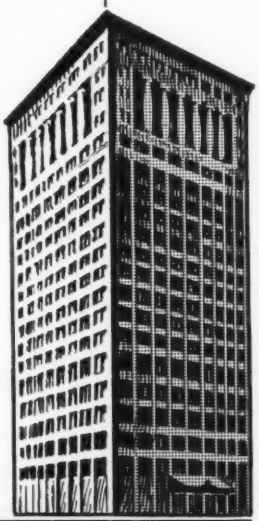

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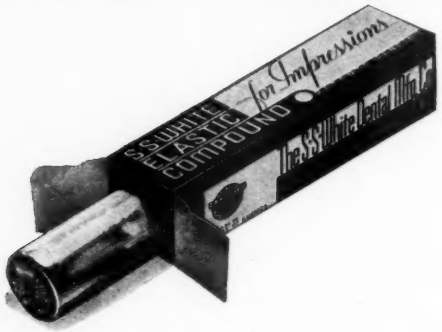

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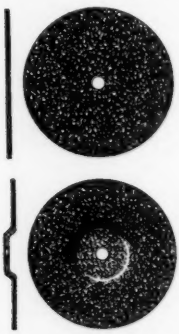

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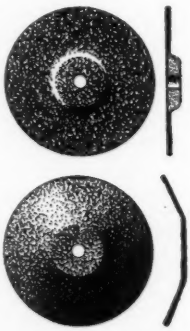

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The Illinois Dental Journal

VOLUME 9 March, 1940 NUMBER 3

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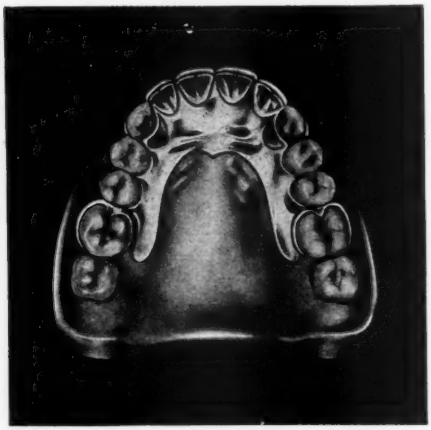

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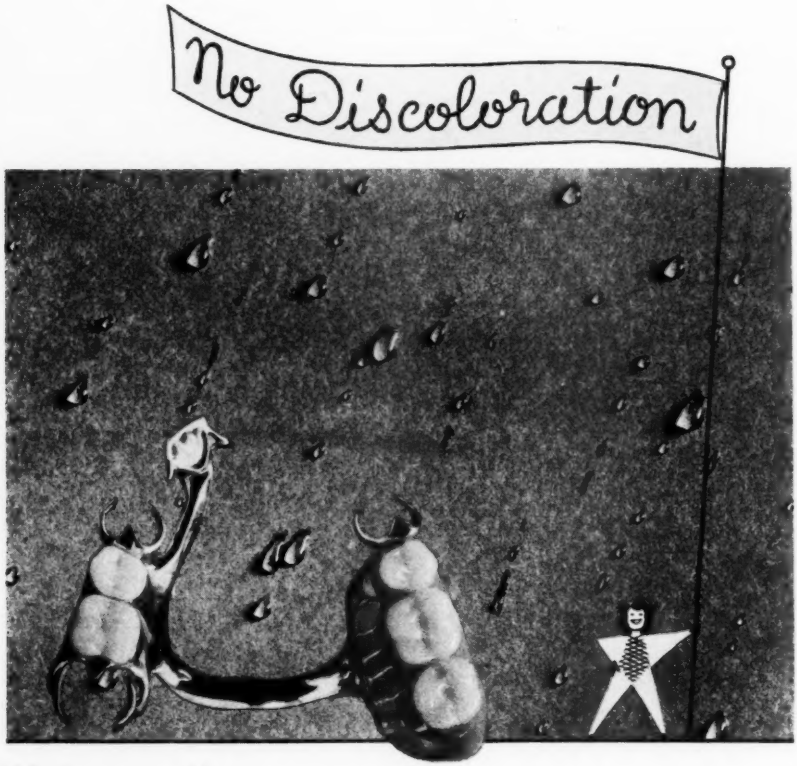

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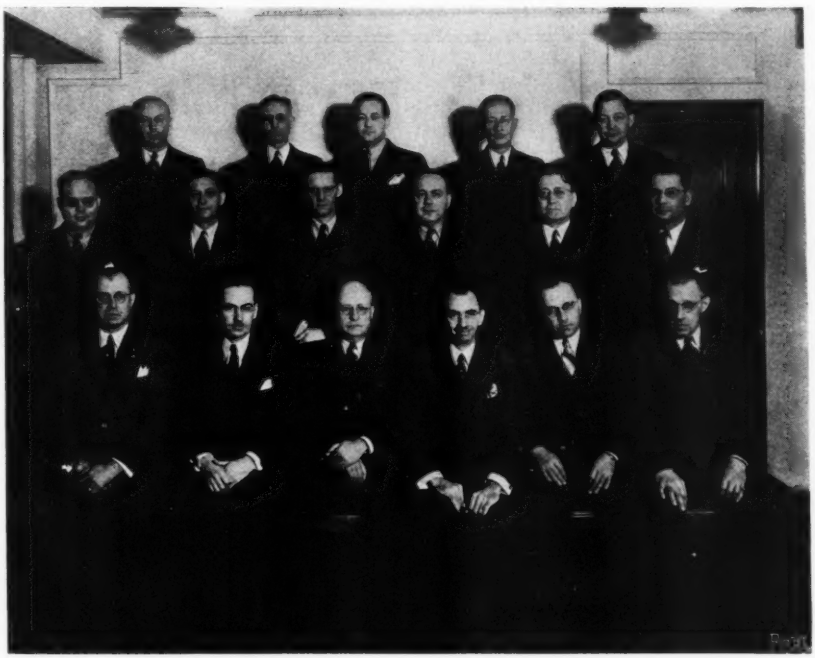

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CARIES: A NEW THEORY OF THE CAUSE*

By PAUL PINCUS, D.D.Sc., Ph.D.

I NEED HARDLY SAY how greatly I appreciate the opportunity of addressing you—an opportunity arising from the welcome visit of two of your most prominent office bearers to my laboratory in London. I have here a few lines of greeting from the Secretary of the British Dental Association, which it is hoped will act in some measure as an indication of the fraternal good feeling existing between our Association and the Chicago Dental Society. (*Letter of greeting presented to section chairman.*)

Before getting down to the heavier material that I am afraid comprises the body of my address, perhaps it will not be out of place to let you know how I became interested in dental research.

Ever since I left the Army in 1916, I have been engaged in practice as a dentist, carrying out the usual routine extractions, X-ray work, dentures, prophylaxis, pyorrhoea treatment and so on. It would be correct to say that very little idea of research entered my mind during the first few years of practice. It was a chance remark of my eldest son, then aged 5, that changed the whole course of my life. One day I noticed something needing attention in one of his temporary molars. When I started to fix it he asked what I was doing, and on being told I was mending his tooth, said "if you were a good dentist Daddy, why don't you stop the holes coming?" That childish remark remained fixed in my mind, making me increasingly aware of the deficiencies in my outlook on dentistry. One realized that the great bulk of his time had been spent in repairing the ravages of caries, and only a small part in preventing caries. Even the part spent in prevention did not seem to have been very profitable.

I propose to omit all mention of my early experiments. For one thing, I tried to approach the question of the cause of caries with an open mind, relying more on my own observations than what others said they saw. It was not long, however, before the necessity for making a more or less permanent record of the observations arose, and this necessity involved me in both technical improvements and a wider acquaintance with academic knowledge.

There is no doubt that dental caries is very prevalent, although opinions may differ as to the cause, and as to methods of prevention. Further research is needed before it may fairly be claimed that the position is clear.

While on the one hand it is necessary to extend knowledge of the pathology of caries, on the other hand the existing theory appears in some respects incongruous with observations well confirmed in other branches of science. To me then, the existing theory appears to offer errors both of omission and of commission.

Now I propose to discuss the chemico-parasitic theory. First put forward by Leber and Rottenstein in 1867, this theory has become associated with the name of Miller (1890) and most work on caries has centered around it.

The chemico-parasitic theory of the cause of caries is that carbohydrate debris remains on the teeth after a meal; bacterial action on this debris results in the formation of lactic acid, which then attacks the enamel. A later addition to the theory includes reference to mucin

*Presented before the Section on Therapeutics, Pathology and Research, 75th Annual Meeting of the Chicago Dental Society, February 15, 1939.

"plaques" beneath which colonies of bacteria are presumed to grow and form acid. This aspect of the theory assumes that acid production is facilitated by the "plaque." Later still bacillus acidophilus has received much attention as the cause of the lactic acid production; other types of bacteria have also been named in this connection.

While the mere age of the chemico-parasitic theory does not render it unacceptable, it is equally true that since the date referred to, 1867, there have come to light further facts which interfere with complete acceptance.

Presence of Carbohydrate Debris on Teeth

There is no doubt that soft white material may be seen on some teeth after a meal; under the name "materies alba" reference to it will be found frequently in works on caries. Examination of this material has been of limited nature; detailed biochemical study should be of interest. It may be noted that by some writers the presence of this soft white material is thought to be an essential prerequisite in caries, while by others the same material is held to precede the formation of tartar. While it is obvious that once the soft white material is present, bacterial action may affect it in more than one way, it is just as obvious that knowledge of "materies alba" is incomplete. Several workers since Breese have pointed out that after identical meals the amounts of the material present vary widely from mouth to mouth. The present writer has observed that the material may appear to increase in amount when no food is taken—e. g., overnight.

Nature of the Carbohydrate Debris

It is after the taking of such things as bread, biscuits, cakes and pastry that carbohydrate debris is thought to remain on some teeth.

Apart from sugar and fat, starch forms a large part of these articles of diet. Ptyalin is present in most mouths although Dodds noted it may be absent. Starch is converted by ptyalin first into forms of dextrin and then into maltose in a short space of time, often not more than a few seconds. Maltose is soluble. In these circumstances it is difficult to conceive that carbohydrate debris is largely maltose, although such polysaccharides as cellulose will probably be present. Evidence on this point is not complete. Teuscher found that no sugar was present in the mouth one hour after the taking of carbohydrates.

Mucus is said to be associated with carbohydrate debris. Reference to the literature will show that the nature of mucus has been the subject of much work of involved nature; the action of mouth bacteria on mucus has received little attention in caries research.

The writer has isolated a mould resembling a monilia from teeth. On culture this organism produced a material closely resembling mucus, in fact, indistinguishable from it on gross examination. Biochemically the material resembled a pectin more closely than a mucin. This isolated experiment does no more than suggest that all mucinous material found in the mouth may not be mucus secreted by salivary and buccal glands. It is hardly necessary to point out that mucin is a conjugated protein, i. e. a protein combined with a carbohydrate radical.

Bacterial Action on Carbohydrates

A great deal of biochemical work has been done on the action of bacteria on carbohydrates. It is an involved subject and cannot be dismissed in a few words; there are several steps intervening before an end-product is formed, and such an action may follow one of

several courses as conditions vary, differing end-products being formed.

These remarks apply to the action of pure cultures of bacteria; Miller used mixed cultures. In circumstances such as those under which Miller worked the matter was reduced to one of pure chance; differing kinds and numbers of bacteria acting for varying periods of time will hardly be expected to give identical end-products.

SPECIES OF BACTERIA POSSIBLY INVOLVED

It has been said above that literature on caries is voluminous, but it appears that there is a curious gap between Miller's work and that, say, of Goadby, of Kligler, of McIntosh, James and Barlow, and of Bunting.

In discussing acid-forming bacteria Miller said "that other bacteria are concerned (in caries) I have no doubt." Later he stated "I was unable to grow the great majority of organisms I saw." Goadby (1903) mentions several varieties of bacteria, and in 1910 refers to yeasts, as possibly concerned in caries. Kligler discussed the literature in detail, while both McIntosh et al and Tucker (1932) worked on bacillus acidophilus; Bunting has also worked on this organism. In his able survey Kligler stated "neither Miller nor any of the subsequent workers has succeeded in finding an organism specific for caries."

Tucker found such acid-producing organisms as enterococci about as frequently as bacillus acidophilus; he also found bacillus acidophilus, to quote him verbatim, "rather frequently and consistently in the mouths of children who had never had any dental caries, or who had developed no new carious lesions for two years." The value of this work is increased by the fact that he mixed a strain of bacillus acidophilus with other organisms, and showed that the method he relied on was capable of demonstrating the presence of bacillus acidophilus with some degree of certainty. His inability, then, to find bacillus acidophilus acquires a conviction lacking from much other work on the question. He did not find bacillus acidophilus "always even in those cases in which there was a high susceptibility to dental caries," and his conclusions are supported by those of Johnston, and also by those reached by the Columbia University Research Group. The findings of Clarke and of MacLean show that other organisms may play an important part in caries. The discrepancies between these various findings are probably due in part to differences in technical methods; some workers examined saliva, others scraped the carious lesions, while others again approached the carious areas from underneath, through sound tooth structure; the media used also differed widely. Little reference can be found to the use of methods favorable to the growth of anaerobes, although the literature contains many references to anaerobes isolated from the human mouth.

It may be seen that between Miller's assertion that lactic-acid-forming bacteria cause caries, and the subsequent concentration of attention on the study of bacillus acidophilus, there is a gap of some importance in the thread of continuity.

Further it may be pointed out that, while lodgement of food debris may precede caries, such lodgement may facilitate the "colonization" of other bacteria besides acid-forming species.

It has been found by Ainsworth, by Mellanby and by King that hypoplastic teeth are more liable to caries than teeth not so affected. Such hypoplasia causes irregularities of the enamel surface; these should provide a lodgement for bacteria. Experiments with dyes have shown that in the irregularities of hypoplastic teeth, tiny collections of dye

lodge readily. While this experiment has not yet been extended to cultures of bacteria, it is a reasonable assumption that they will behave in a manner similar to liquid dyes, and collect in the irregularities of surface.

The question of the colonization of bacteria in the mouth is one that will need close attention in the near future. One might arbitrarily divide bacteria into colonized and transient forms. Little has been done in this direction in the past, and some such reason as this may help to explain the confusion that exists in regard to mouth bacteriology. In passing, it may be noted that many mouth bacteria have been identified strictly on the basis of microscopy. The most superficial acquaintance with bacteriological methods will serve to show the inadequacy of this method. Bacteria must be grown, and grown in pure culture, before any attempt to identify them can be made.

Some of the few experiments on the colonization of bacteria were made by Bloomfield. Starting with fairly extensive surveys of the bacteria on the tongue, he found that most mouths contained indigenous flora, and it might be said that this conclusion, while it has largely escaped notice in dental research, might easily be of considerable importance. In one of Bloomfield's experiments he isolated an organism from the mouth, grew it in pure culture and tried to make some alteration in the mouth flora by introducing the organism in large quantities into the mouth from which it was originally isolated. He found he was unable to alter the flora. Later he tried to alter the flora by scrubbing the tongue with a stiff brush and an alkaline solution. This severe treatment also failed to make any alteration in the flora.

While these experiments may have only a limited bearing on the bacterial flora on the surface of enamel, they are at least suggestive. The writer has made experiments of a similar nature on extracted teeth and there seems little doubt that some bacteria are colonized to a surprising extent. It may be of interest in passing to point out that microscopic examination of tooth sections have suggested to the writer that some bacterial forms may penetrate enamel to a limited extent. Any dentist knows that tartar may be very strongly adherent to enamel or to a tooth root. If bacteria first penetrate tooth structure and the bacterial mass later calcifies, it will be clear that we have here a possible reason why some tartar cannot be scraped off without leaving a roughened surface. In collaboration with Drs. Murray and Glock, the writer has recently carried out some work on the phosphatase of some common organisms. Knowledge of bacterial phosphatase in the mouth should provide for the formation of tartar, an explanation hitherto lacking.

Nature of the Acid Formed

Miller gave a detailed account of his method of production and identification of lactic acid from the action of saliva (containing mouth bacteria) on starch. It has been pointed out above that starch is acted on by ptyalin in the mouth to form dextrin and later maltose. It may then be asked whether Miller, finding the yield of lactic acid from sugar inadequate, used starch and so was misled in one of his fundamental conceptions, lacking as he did the wide sweep of knowledge available later.

Working with McIntosh, James and Barlow, Dodds grew bacillus acidophilus in glucose broth; a small amount of malic acid was formed and lactic acid in traces only. Further, if lactic acid causes caries, it should be possible to demonstrate the presence of calcium lactate in carious material. Csernyei used several delicate methods in attempts to show this, without success.

Bacteria may produce lactic, acetic, formic, butyric, proprionic and other higher acids from carbohydrate material (Douglas, Eyre, Laidlaw and Wolf): it is known that some of these may attack enamel.

It must be admitted that Miller made out what appears to be a strong case for acids as the cause of caries; in support of his arguments his book shows illustrations of preparations which today still stand among the best of their kind, although interpretations may differ from those he made.

PRESENCE OF ACID IN THE MOUTH: MUCIN PLAQUES

In some of his experiments, Miller put carious material on to blue litmus, which turned red. The writer has repeated this experiment; his results do not agree with those of Miller, in that in 53 experiments, each on material from a different tooth, many showed no change in color with litmus, some showed a change so slight as to render certainty impossible, while one was found to give a red color. It was further found that saliva free from food will often cause litmus to change from blue to red. Bunzell found the pH of saliva to average 6.4 for 324 cases, while Starr (1922) found an average value of 6.6 for 610 cases.

Such departures from normal are, however, slight and inadequate to allow of attack on enamel. It is hardly necessary to point out that saliva is buffered, and so resists marked changes in pH value; Champion used drastic measures in attempts to alter salivary pH, without success.

The writer has made but few experiments with mucin. Reference to the literature will show that the study of mucin is an involved subject, while the living body is able readily to detect in mucin, changes beyond the limits of biochemistry. Some experiments with membranes from tooth surfaces have, however, been made. It has been found that such membranes behave precisely as do other animal membranes of similar nature; any particle smaller than soluble starch passes through readily; hydrogen (or acid) ions pass through freely.

It is then open to question whether accumulation of acid adequate to account for the phenomenon of caries could persist in the mouth in the presence of saliva with its marked buffering action.

I propose here to digress slightly and illustrate an experiment of a kind which has influenced my point of view regarding acids and caries. (Motion picture shown at this point.)

The whole point of the film is, that acid attack alone did not result in the formation of a lesion in any respect resembling those of clinical caries. Indeed, it would have been somewhat surprising if such result had been seen. I propose now to examine this point in some detail.

In the past, enamel as a tissue has been considered so highly calcified that it has not been thought worthwhile to devote much attention to the uncalcified portion. Yet, when the literature is surveyed, it may be seen that an entirely different conception of enamel may be formed, based on observations that appear incontrovertible.

From here I propose to devote some attention to a new hypothesis of dental caries, commencing with a new view of dental enamel.

A NEW VIEW OF DENTAL ENAMEL

The conception of newly erupted enamel held by the writer is that it is covered by organic material on the outer surface, lined by organic material at the dento-enamel junction, and permeated by organic material; this idea was evolved during personal communication

with Professor MacCallum, of the University of Melbourne, Australia.

Descriptions of the organic layer on the surface of enamel date from the time of Alexander Nasmyth, 1839. Excellent descriptions of the organic layer may be found in the work of Paul in 1894, and Gottlieb in 1920. The presence of organic material at the dento-enamel junction was recognized later, while the demonstration of organic material in the depths of the enamel has only been complete in recent years (Murray and Bowes).

One method of demonstrating the presence of organic material in the body of enamel has been described in a previous publication by the writer. If a thin slice of enamel, free of dentine, be heated to between 250° C. and 260° C. for about ten minutes, it changes color. From a white glistening appearance it becomes a buff or light yellowish-brown color, somewhat resembling that of a grain of wheat. This change of color is almost certainly due to the organic material. Further, it is found that if such a piece of heated enamel be exposed to such a dye as methyl blue the dye penetrates it readily. While these observations may possibly be capable in part of other explanations, it is most probable that they are accounted for by the presence of organic material. While analytical methods show that only about 2% by weight of organic material is present, it must be remembered that by volume this would amount to 5%. This difference is accounted for by the differences in density of organic to inorganic, which bear the ratio of about 1:2.6. The question of "vitality" of enamel may arise. The term vitality has wide limits; the main difficulty in fitting the conception of "life" to enamel seems to be that cells have not been demonstrated on human enamel. Orban (1930) showed cells on the surface of pigs' enamel. I have published an illustration of cellular material in the occlusal groove of a human unerupted tooth, but have done no work on development. Adequate descriptions may, however, be found in standard works such as those of Orban and Meyer-Churchill, while Skues also added to our knowledge of this aspect. It cannot be said, however, that the structure of enamel is by any means completely understood, and many workers are at the moment engaged in its study. For example, detailed chemical analysis has been and is being carried out by M. M. Murray, while Thewlis is using such methods as: X-ray diffraction by transmission through sections; X-ray diffraction from powdered specimens; examination of radiographs by the aid of a microphotometer.

Another method of examination of enamel surface which might be extended is that by vertical illumination by a device such as the Ultropak. This was first used by Kanthak and Benedict, and further work is being carried on in England at the present time.

In 1930, Noyes described "raised-up lesions" on enamel; these are more likely to be the result of attack on the organic part of enamel than on the inorganic part; the writer has seen such lesions. Mummery, Bodecker and Malleson have also described altered areas in the depths of enamel; it is unlikely that all of these are to developmental origin, particularly those shown in the unsurpassed work of Malleson. Both Laidlaw and Hevesy worked on enamel but from entirely different aspects. The former dyed enamel by the aid of electricity, while the latter has found that radio-active material from the blood stream may be found in enamel of rats shortly after injection in another part of the body.

There is then some evidence that enamel is not an impermeable lifeless structure, devoid of organic matter and

of all resemblance to other body tissues. In these circumstances it is not unreasonable to assume some response (from such a tissue as enamel) as a result of a stimulus. This view was set out by the writer in 1935, and is still held. It is realized that enamel contains more than 90% inorganic material; at the same time emphasis is here laid on the organic material found associated with it, since it is thought that this organic material must play a part of importance in caries. It is further thought that undue emphasis has in the past been laid on the possibility of acid attack on the inorganic material to the exclusion of other hypotheses. Professor F. C. Wilkinson, of Manchester, first directed my attention to the possible importance of the organic material associated with enamel.

NATURE OF ENAMEL PROTEIN

I now propose to turn to a brief consideration of the nature of enamel protein. Rosebury has carried out an examination of enamel protein; in fact, it may be said that since 1887 when Thompson first applied the descriptive term "keratin" to this material, this description has been accepted. Further, it appeared to be a reasonable deduction since enamel is epithelial in origin; at the same time it must be remembered that ameloblasts are among the most highly specialized cells in the body. I have collected enamel protein by a process of decalcification with weak hydrochloric acid followed by repeated washings.

Without here entering into the details of biochemical methods, it may be stated that the organic material associated with enamel is a protein of which the nitrogen content is just over 12%. It has been found that tyrosin is present while a faintly positive biuret reaction has been observed. The xanthoproteic test can hardly be relied on as the protein is yellow when first collected. The presence of cystin has not been demonstrated, although by micro-analysis 1.2% of sulphur has been found present. As a class, keratins are thought to contain from 2% to 15% of sulphur, and a number of keratins of different origins have been examined by the writer, all readily giving a positive result when tested for the presence of cystin by the sodium nitro-pruisside method. In passing, it may be noted that when Cape and Kitchen examined enamel protein by polarized light, they concluded that it should be considered as a type of keratin differing from others they examined. Enamel protein is not attacked by potassium cyanide nor by sodium sulphide, but slight attack by pepsin and trypsin occur. The main conclusion reached by the writer is, that the organic material associated with enamel is a protein of a resistant nature resembling reticulin.

The amounts of enamel protein so far available for examination have been limited to collections of less than 50 milligrammes. It has been found, however, that some fatty material is present. From a consideration of solubilities and melting point it is thought that this fatty material resembles in some respect a sterol. It is, of course, well known that the sterols are closely related to bile salts, which are cholane derivatives and all related to phenanthrene. Of the steroles irradiated ergo sterol is calciferol, i. e., vitamin D2. The possible presence or significance of sterols in the teeth appears to have been overlooked. The opinion at present held by the writer in regard to the sulphur content of enamel protein is, that while cystin has not been demonstrated, other amino-acids containing sulphur, e.g., methionin, which have recently been discovered must be taken into consideration and, in

fact, the presence of sulphur-containing compounds in proteins is receiving a great deal of attention at the present time. It would be as well to emphasize the fact that sodium sulphide appears to have no action on enamel protein. Sulphides are of course extensively used as depilating agents, on account of their action on keratins, presumably attacking them at the sulphur linkage.

Bacterial Attack on Nasmyth's Membrane

In the literature there will be found little reference to experiments with mouth bacteria capable of attacking Nasmyth's membrane. It is known that Nasmyth's membrane is found in occlusal grooves, bound down to the enamel surface by "stalactite-like" processes, one such process between each prism and its neighbor.

From this it follows that bacterial attack on the membrane may be the initial lesion of caries in occlusal grooves. All keratins resist bacterial attack and Nasmyth's membrane has been found by the writer to resist bacteria in a similar manner. It may here be pointed out that there are technical difficulties in the way of observing the action of bacteria on Nasmyth's membrane; at the time of writing these have not been fully overcome. At the same time it is known that bacteria capable of attacking protein may be found in the mouth. The anaerobes constitute one such class of bacteria. Glynn stated that "the mouth anaerobes should be restudied with the same skill and care recently devoted to those from war wounds." Cruickshank pointed out that "between the teeth anaerobes almost exclusively are found," while Hall worked for some years on this question.

The writer has exposed enamel to cultures containing anaerobes and in some cases has found that the enamel has been attacked. These experiments are open to the same criticism as might be directed towards the work of Miller, in that mixed cultures obtained from carious teeth were used. Carbohydrate material was almost entirely absent from these cultures, and the medium consisted of protein, much of which remained unattacked during the progress of the experiments. In these circumstances it is assumed that bacterial attack on enamel occurred under conditions which almost certainly preclude formation of acid. The protein breakdown occurs typically in an alkaline medium, but the presence of intact protein with its buffering action might be expected to keep the pH of the culture nearly constant. Frequent repeated observation showed that this was the case. In these circumstances the writer feels justified in stating that there is present in carious material an organism which can attack enamel, an attack in which acid plays no part. The specimens of enamel so attacked were shown to representatives of the Chicago Dental Society who were recently in London, and further have been illustrated in the British Dental Journal.

There are technical difficulties in the way of isolating anaerobes in pure culture, but enough has been said to suggest that such a line of attack in caries research might prove to be of interest.

Spread of Caries in Enamel

Now just a few words on the spread of caries in enamel. In works on caries there may be seen illustrations of the lateral spread of caries, both at the dento-enamel junction and in the thickness of the enamel.

The first of these phenomena: spread at the dento-enamel junction: was well illustrated by Miller (1892) and often since then. It has long been known that organic material was present in relative abundance at this part of the tooth; inadequate attention seems in the

past to have been paid to these observations which appear clearly to suggest that in this manifestation of caries, attack on the organic material plays a major part. It may be pointed out in passing that the organic part of dentine might be expected to differ from the organic part of enamel, since dentine arises from the meso-dermal layer while enamel is of epithelial origin. Collagen forms many connective tissues, while keratin forms many epithelial structures. The nature of the organic material at the dento-enamel junction is not known. Lateral spread of caries in enamel was shown by Malleson, and also by others. In the opinion of the present writer, the spread of caries at the dento-enamel junction and the lateral spread in enamel cannot be readily associated with the acid attack theory of caries; a theory of attack on the organic matter offers no such difficulties.

In support of the contention that enamel may be attacked in the absence of acid, cases described by Hopewell-Smith and by Woods, and by Appelbaum may be quoted. All these writers have described specimens of enamel which appeared to have been eroded by giant cells; the illustrations support this contention.

SUMMARY

In closing, it would be as well to summarize the position. Objections to Miller's theory are:

(1) Acid has never been shown to be present in the mouth.

(2) Calcium lactate, which would be formed from the action of lactic acid on tooth structure, has never been found.

(3) Starch soon turns to maltose, which is soluble and remains in the mouth for a few minutes only.

Further points of interest are:

(4) Keratins resist acid attack.

(5) The literature contains no reference to an organism shown to be capable of destroying Nasmyth's membrane.

(6) Teeth exposed to cultures of carious material may show enamel breakdown in the absence of acid.

While it is obvious that the purpose of the research is not yet complete, it may fairly be claimed that some progress has been made, progress which appears to justify continuance of the work.

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"CALXYL"

(AN ADDENDUM TO "PRESERVING VITALITY OF PULPS EXPOSED BY CARIES IN YOUNG CHILDREN")

Several inquiries regarding "Calxyl" have been received since the appearance of the article, "Preserving Vitality of Pulps Exposed by Caries in Young Children" in the January issue of this JOURNAL.

"Calxyl" is the trade name of a German commercial preparation composed principally of calcium hydroxide and water. A similar preparation may be made easily by adding distilled water to calcium hydroxide to make a stiff paste (about the consistency of library paste). A small amount should be made and kept on hand in a tightly stoppered brown jar. This paste is not very stable in open air since air contains carbon dioxide which combines with the calcium hydroxide to form calcium carbonate.

J. S. Restarski.

FILLING OPERATIONS FOR DECIDUOUS AND YOUNG PERMANENT TEETH AS THEY RELATE TO FUTURE DENTAL HEALTH*

By MARY M. MOORE, D.D.S.

THE ETIOLOGY OF DENTAL CARIES is today unknown. Many theories are being advanced, but when we apply them in the clinical care of our patients the favorable results we desire are not obtained.

Dental caries remains one of the greatest menaces to the health of the human race.

The dentist is called upon day after day to cope with this devastating disease with no definite cure at hand. Clinincal care so far seems to be the only weapon we have which enables us to treat the disease as it occurs and keep it under some form of control. Clinical care, therefore, in our plan for "Future Dental Health" is a complex study of the individual and his or her mouth problem and an attempt to find the solution to that problem.

My paper is the result of personal experience. I shall give the clinical methods I have found most satisfactory in my attempt to treat the disease of dental caries. In considering all the dental problems presented to me I have accepted and applied to my practice the following as facts.

A clean mouth is important to the health of that mouth.

The nutritional adequacy of the diet is of fundamental importance, from the prenatal period through adolescence, in the formation of a sound healthy body and of well formed and well enameled teeth. It is equally important throughout life in the maintenance of the general health and the health of the paradontal tissues.

Some persons are free from caries even though their diets have long been inadequate nutritionally; other persons are susceptible to caries even though they have long been accustomed to well balanced diets. The nutritional adequancy or inadequacy of the diet may be a factor in determining the rate or progress of caries, but is probably not its primary etiologic agent.

Not all teeth in the mouth are equally susceptible to caries. Cavities begin in highly protected areas on the outside of the teeth; not all poorly enameled teeth are susceptible; not all well enameled teeth are free from caries.

The physiologic age and the chronolongic age of a child may be very different.

The problem of focal infection is one to which dentistry has given much thought. This problem can be solved only through prevention. Dentistry for children is an excellent ground on which to wage the battle against pulpless teeth.

Heredity seems to play a part in the tendency to caries.

For consideration of clinical problems we have two groups. The first, the child who is seen regularly three or four times a year from 2 or 2½ years of age until adolescence or older; the second, those children we see at various ages such as 7 or 8 on, etc.

GROUP I

With the first group I have an opportunity to obtain the results which clinical dentistry has to offer in the control of dental caries. The methods consist chiefly of a careful prophylaxis and

*Presented before the Section on Children's Dentistry and Mouth Hygiene, 75th Annual Midwinter Meeting of the Chicago Dental Society, February 14, 1939.

the teaching of home care. These, I consider, the first steps in clinical control and are most important. Each surface of every tooth is carefully cleaned and polished. Any imperfection on any surface is noted. Howe's silver nitrate solution applied to a surface which does not seem perfect will in some cases prevent caries. Its application is recorded and a careful examination of these surfaces made at each succeeding visit so that if caries does occur it does not develop more than the minimum amount. I do not approve of the use of silver nitrate when caries has occurred. Such a case must be treated as any other carious lesion, by the removal of all decay and the filling of the subsequent cavity.

Also at this time all carious lesions or cavities are recorded. This should always be a 100% finding. If a cavity is missed in the examination the patient is not receiving proper care. If I have doubt about a surface I place a wedge which enables me to thoroughly clean that surface at a subsequent visit and place silver nitrate if there is no cavity.

If a quantity of calcium deposit is found in the mouth of a young patient a careful physical examination of the patient by a physician is requested. Anemia and diabetic tendencies are very frequently associated with this finding in the young child. In case of anemias the deposit will be found sometimes as long as a year before the blood picture of anemia is found. As long as tartar deposits occur the young patient is watched by the physician.

What relation does this have to the treatment of cavities? The second dentition is being formed in the child. The quality of the tooth to be erupted is dependent on the health of that child and his resistance to disease. One may not be able to keep the second dentition free from caries but one can control the resistance of that tooth to penetration. There is no proof of a great difference in the hardness or softness of teeth or their susceptibility to caries, but clinical evidence does seem to indicate that in the same given time two teeth in a mouth will decay to different depths. It is interesting to note that the past history of diseases can be associated to their calcification.

I consider it important to record the time of eruption of the second dentition in the children from six years of age on. I am always more anxious about the mouth with accelerated than late eruption. If a child of ten has all pre-molars in place, that is a mouth that must be watched most carefully; they have a great tendency to caries.

If during an examination I find the first permanent molars or the pre-molars just erupting and their occlusal surfaces entirely free of caries, I thoroughly clean these surfaces and cover them with a thin layer of Ames' black copper cement. Such treatment has been one of my greatest aids in caries control. If, however, caries is present in the occlusal surface of a molar or pre-molar at eruption, I remove it with a fine bur and then fill the cavity with copper cement.

I always use small burs in the preparation of a cavity since the friction of the bur creates heat and irritation, then pain. A small sharp bur revolving at slow speed will create the minimum amount of irritation to the pulp. We perform all operations with the health of the tooth as our objective, therefore this method of operating is chosen not necessarily to prevent the patient from suffering pain, although important, but to keep the tooth from suffering shock.

If, for example, we are going to fill the distal surface of a first deciduous molar, the smallest inverted cone bur placed at the occlusal contact point and brought into the center of the tooth with

light pressure will cut through the marginal ridge into the decay; then small chisels will break down the walls. A small round bur will remove the remaining decay, if used with very light pressure. The small fissure burs will square up any wall although chisels should be used as much as possible. When the cavity is prepared, dry with cotton pellets and alcohol, remove the alcohol with additional cotton pellets (I do not use air), place the copper cement and the operation is complete.

This procedure is the one used for all deciduous teeth as well as approximal surfaces of pre-molars and molars in the second dentition. Where decay occurs shortly after eruption of the first or early second dentition I do not think there is any material superior to copper cement for the filling of the subsequent cavities. I make this statement despite the fact that the copper cement may dissolve (the greater the tendency to caries the more rapid the dissolution) and require replacement at regular intervals thereafter.

The child and his parents must be educated to accept black copper cement as a means to an end and not as a filling. I cannot consider copper cement unattractive after years of having seen the many clean healthy mouths resulting from its use. Physicians, nurses, and school dentists need much education on this point as they all too frequently consider the black copper filling a cavity and so report to the parent. When I find that the parents of one of my patients have received such a report I always use the occasion to write a note, explaining the importance of copper cement in the maintenance of healthy teeth.

If copper cement is maintained as a filling with little or no dissolving, we find conditions favorable to the resistance of caries. I have seen copper cement remain on the occlusal surfaces of pre-molars and molars for eight and ten years without need of replacing. These are in mouths in which caries does not occur rapidly.

I find the second permanent molars erupt carious more frequently than any other teeth. In such instances I always remove all decay and keep the *occlusal* surfaces filled with copper cement until the patient is eighteen or nineteen years of age. The approximal cavities in such teeth are filled with copper cement first, then amalgam a year or two after erupting.

If anterior approximal cavities develop (either mandibular or maxillary) in a child's mouth in this group, I prepare the cavity from the lingual surface, allowing the labial surface to remain, and fill with copper cement. We recognice that here is a mouth with a great tendency to caries.

As was mentioned previously, if the approximal surfaces of pre-molars or molars decay shortly following eruption, I always use copper cement for a year or more, then remove some of the copper cement and replace with amalgam. I do not know what the action of copper oxide on tooth structure is, but this I do know, that an amalgam filling placed in a cavity previously filled with copper cement for a year or more is a better filling than one not so placed. We do not find decay occurring around the margins of such an amalgam filling even in mouths with great tendencies to caries.

There is a different problem to consider when filling proximal cavities in permanent teeth. It is that of preventing injury or destruction of the periodontal membrane. In deciduous teeth, if our copper cement dissolves and the gum becomes irritated, no great damage will result, since, according to Mershon and other orthodontists, the alveolar

process of deciduous teeth is lost and the permanent alveolar process develops with the second dentition. For this reason we may not keep copper cement in the approximal surfaces of pre-molars and molars the same as in the deciduous teeth. If I find caries in two adjacent approximal surfaces I fill, after a year, one of the cavities with amalgam and the other with copper cement, thus increasing the quantity of copper cement in the mouth, for as it dissolves it appears to give generalized protection.

Sometimes following eruption, white spots develop at the gingival margins of pre-molars and molars. If these surfaces are thoroughly polished, without cutting, and a thin covering of copper cement is placed, we find very frequently that no decay will develop in the future.

The buccal pits of the mandibular first permanent molars are very susceptible to caries. If such cavities are prepared and filled with copper cement for six months or a year then the top layer of cement removed and amalgam placed, better restorations will result. It is difficult to keep copper cement in sufficient quantities in this type of cavity to prevent food from catching and subsequently irritating the gingiva. Here I find amalgam to be superior after copper cement has first been used.

The buccal surfaces of the maxillary first and second molars very frequently show indications of early breaking down. If such surfaces are thoroughly cleaned and polished and a thin layer of copper cement placed over them I find in the years to come that the surface of the enamel has been maintained in excellent condition.

If and when cavities occur in the young anterior teeth of the second dentition, copper cement is used as a filling, the cavities being prepared from the lingual surface. These should never at any time be anything but the smallest of cavities. The copper cement filling is maintained until the tooth has reached the age that a porcelain inlay or gold foil may be placed with safety.

GROUP II

The second group of children, or those patients for whom we do not have the opportunity to give early clinical care, very frequently present the most difficult problems. In this group are the individuals who will always suffer from lack of early care, but their problems must be solved and a future plan for their dental health developed.

The age and history of these children are taken at the first visit and a careful examination and record made of existing mouth diseases. Fortunately some will present only minor problems. The finding of all cavities and filling them according to the plan described for the first group will place these mouths in good condition, and from then on they can be followed through just the same as the first group.

The mouths that have many extensively decayed teeth present various problems. The physiologic and chronologic age records I find to be of utmost importance; the type of treatment frequently depending on these findings.

A child, whose chronologic age is eight or nine and whose physiologic age is only seven or eight, with many badly decayed deciduous molars must have treatment so that these teeth may be retained for three or four years if possible. The method employed is to remove as much of the soft decay and stain as possible, allowing a sufficient amount to remain as a capping over the pulp, then dry with alcohol and cotton, varnish, and place copper cement. The exact condition of the teeth is recorded and careful check at each subsequent

visit is made for vitality. If the teeth remain vital, and most of them do, copper cement is replaced from time to time and the teeth lost after normal resorption of the roots. I have examined many of these teeth after they were lost and found that the copper cement had penetrated into the surface of the dentine over the pulp which was apparently in an excellent state of health.

The type of cavity just described must not be confused with one in which decay has penetrated, if removed, to the pulp. For these teeth I have but one treatment and that is extraction.

A first permanent molar presents a different problem. Here we have one of the most important teeth in the mouth. I remove all decay, if possible, place varnish and fill with copper cement. If I have any doubt about the possibility of a pulp exposure, should I remove all the stain, I allow some stain to remain and fill the tooth with copper cement. I make a record of the exact condition of that tooth and eight months later remove all the copper cement. If the copper cement in contact with the dentine is black I replace the copper cement and know I have a tooth which has been saved. If the copper cement next to the dentine is brown and, upon grinding, seems very dry, the condition must be considered as less favorable than that of the first. I replace the copper cement and make a record of the condition. The vitality of the tooth is checked with ice at each subsequent examination of the patient and after two or three years, if the pulp has remained vital, the copper cement is again entirely removed and it will be found that the dentine presents a hardened surface. The pulp will have receded sufficiently so the possibility of irritation is not great. The cavity should be cleaned thoroughly. Do not remove the dentine that is hard even though it is thoroughly stained for here you have an excellent pulp cap; simply fill with copper cement and you should have another healthy tooth.

The third type of cavity in first permanent molars to be considered is that in which decay has so advanced that no treatment of any kind will permit the retention of a vital pulp. The physiologic age of the child must be considered before treating this type of cavity. Most children have reached the physiologic age of nine, ten or eleven years before the first permanent molars have reached this stage of decay. An x-ray is taken to make certain the state of development of the second permanent molars. If the child's physiologic age is nine years we must expect the passing of at least three and probably four years before the second molar erupts. The physiologic development as well as the x-ray must be considered. My objective in these cases is to get as many months or years of service from the tooth as I can, making the time between the loss of the first molar and the eruption of the second molar as short as possible. If there is no previous history of discomfort or aching, all possible decay is removed; a dressing of creosote-eugenol on asbestos fibre is placed over the floor of the cavity (this can be removed without pain), then copper cement is placed in the tooth. A careful record is made of the condition of the tooth and the treatment. If no discomfort is reported and the tooth responds as vital to ice the dressing is allowed to remain for eight months. Then remove the copper cement and dressing and test for vitality. If it is satisfactory replace another creosote-eugenol dressing and copper cement. If at any time the tooth does not respond as vital it should be extracted. Since copper cement can penetrate it must never be placed in these cavities without a protective dressing. Immedi-

ate involvement of the pulp will be your only reward.

In the anterior deciduous teeth in the mouths of this second group, I always use copper cement. It is not esthetic perhaps but I am working out a plan for health. I know of no other cement which gives the same results; I have tried most of them. If the anterior permanent teeth have cavities sufficiently involved so that copper cement, when placed, would penetrate and permanently stain them, I use silver cement until such time as the tooth is developed so that a porcelain inlay may be placed.

When the mouth of the patients in this group have had their first problems cared for they then become a part of the plan as outlined in the consideration of our first group—planning for control and prevention.

The subject given to me has limited my discussion to the consideration of deciduous and young permanent teeth. If I do maintain a state of health in these younger children I do not consider the dental problem of the child answered. I have not found that the control of decay or absence of decay before fourteen assures control after fourteen. I have found the greatest quantity of decay in any group is during and following the rapid growth period, or after fourteen years. *The same* or *more care* must be exercised in the years following than has been necessary in the years under consideration today, if the future dental health of the individual is to be assured.

CONCLUSIONS

The future dental health of the individual is best attained by the prevention of dental caries. Clinical care is our only known factor for the control of dental caries.

The best clinical results are obtained when the patient can be seen continuously from two to two and a half years of age on through to adult life.

Black copper cement used freely as a filling material gives me the best results in the control of caries. Why these favorable results are obtained from such a filling I do not know. Some research into the action of copper oxide would be most helpful. Chemists have told me that the enzyme of no bacteria can be found in the presence of copper oxide.

The quantity of copper cement necessary to maintain a mouth free from decay is different in each mouth. When a sufficient amount of copper cement has been placed new decay does not develop.

A new patient with much caries is treated by placing many copper cement restorations after which the environment of the whole mouth seems changed. Like cases that are treated with gold inlays or amalgam continue to have recurrent and new caries.

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CALCIUM METABOLISM AND TEETH

(A Summary of Present-day Knowledge*)

By Rudolph Kronfeld, M.D., D.D.S.†

Editor's Note: *This brief compilation of present-day knowledge concerning calcium metabolism and teeth contains essentially the same thoughts that were expressed by Schour in a more extensive article published in the September* 1939 *issue of this* Journal. *In it are found several statements which are at variance with what is generally believed by many dentists and by almost all physicians and lay persons. The author has tried to express himself concisely; at the same time he has attempted to indicate how much actual evidence, be it positive, doubtful, or negative, lies behind each statement. We all are likely to be impressed by single and outstanding clinical observations, and are tempted to make sweeping generalizations on the basis of insufficient evidence. This is particularly true of questions like caries in pregnancy or the influence of the mother's health upon the teeth of the infant. Here only carefully recorded findings in a large number of individuals, with ample and adequate control observations, are statistically valid. Therefore, if the author says, "it is doubtful," or "there is no statistical evidence," or "it has never been demonstrated," he means that the popular concept has not been corroborated by scientific methods.*

The article was originally presented before the members of the faculty of the Chicago College of Dental Surgery, Dental School of Loyola University. It was obtained for publication in the Journal *in the belief that its concise summarizations would be of practical interest to our readers.*

Calcification of the Deciduous Teeth. Calcification of the deciduous teeth begins at from four to six months in utero (see Table). The amount of enamel and dentin present at birth can be determined by the neonatal ring, which is an incremental line (line of apposition) dividing the prenatally formed from the postnatally formed tooth structure. The inner portion of the enamel of the deciduous teeth is mostly prenatal, the outer (superficial) portion, postnatal.

Disturbed Calcification of the Deciduous Teeth. Disturbances of the calcification of the deciduous teeth are almost entirely confined to the postnatally formed portion of these teeth. During pregnancy, when the foetus develops at the expense of the maternal organism, the mother is able to supply sufficient calcium to permit normal calcification of the teeth. After birth, however, the infant is often subjected to various illnesses and metabolic disturbances which may adversely influence the postnatally formed (outer) portion of the enamel and result in hypoplasia of the deciduous teeth. Our present knowledge of the prenatally and postnatally formed portions of the deciduous teeth has led to the tentative conclusion that the condition of the mother during pregnancy has but little influence so far as the child's teeth are concerned. Proper prenatal attention is of paramount importance for the development of both mother and infant; but it is doubtful whether it can in any way alter the tooth structure of the offspring.

Calcification of the Permanent Teeth. Calcification of the permanent teeth begins at birth with the cusps of the first permanent molars (see Table). During the first six months after birth calcification starts in the upper central incisors, upper cuspids, lower central and lateral incisors, and lower cuspids. Towards the end of the first year calcification begins in the upper lateral incisors. Between 1½ and 2½ years calcification

†Deceased.

*From the Foundation of Dental Research of the Chicago College of Dental Surgery.

CHRONOLOGY OF THE HUMAN DENTITION
LOGAN and KRONFELD (slightly modified by McCALL and SCHOUR)

	Tooth		Hard Tissue Formation Begins	Amount of Enamel Formed at Birth	Enamel Completed	Eruption	Root Completed
Deciduous dentition	Maxillary	Central incisor	4 mos. in utero	Five-sixths	1½ mos.	7½ mos.	1½ yrs.
		Lateral incisor	4½ mos. in utero	Two-thirds	2½ mos.	9 mos.	2 yrs.
		Cuspid	5 mos. in utero	One-third	9 mos.	18 mos.	3¼ yrs.
		First molar	5 mos. in utero	Cusps united	6 mos.	14 mos.	2½ yrs.
		Second molar	6 mos. in utero	Cusp tips still isolated	11 mos.	24 mos.	3 yrs.
	Mandibular	Central incisor	4½ mos. in utero	Three-fifths	2½ mos.	6 mos.	1½ yrs.
		Lateral incisor	4½ mos. in utero	Three-fifths	3 mos.	7 mos.	1½ yrs.
		Cuspid	5 mos. in utero	One-third	9 mos.	16 mos.	3¼ yrs.
		First molar	5 mos. in utero	Cusps united	5½ mos.	12 mos.	2¼ yrs.
		Second molar	6 mos. in utero	Cusp tips still isolated	10 mos.	20 mos.	3 yrs.
Permanent dentition	Maxillary	Central incisor	3 - 4 mos.	.....	4 - 5 yrs.	7- 8 yrs.	10 yrs.
		Lateral incisor	10 -12 mos.	.....	4 - 5 yrs.	8- 9 yrs.	11 yrs.
		Cuspid	4 - 5 mos.	.....	6 - 7 yrs.	11-12 yrs.	13-15 yrs.
		First bicuspid	1½- 1¾ yrs.	.....	5 - 6 yrs.	10-11 yrs.	12-13 yrs.
		Second bicuspid	2 - 2¼ yrs.	.....	6 - 7 yrs.	10-12 yrs.	12-14 yrs.
		First molar	at birth	Sometimes a trace	2½- 3 yrs.	6- 7 yrs.	9-10 yrs.
		Second molar	2½- 3 yrs.	.....	7 - 8 yrs.	12-13 yrs.	14-16 yrs.
		Third molar	7 - 9 yrs.	.....	12 -16 yrs.	17-21 yrs.	18-25 yrs.
	Mandibular	Central incisor	3 - 4 mos.	.....	4 - 5 yrs.	6- 7 yrs.	9 yrs.
		Lateral incisor	3 - 4 mos.	.....	4 - 5 yrs.	7- 8 yrs.	10 yrs.
		Cuspid	4 - 5 mos.	.....	6 - 7 yrs.	9-10 yrs.	12-14 yrs.
		First bicuspid	1¾- 2 yrs.	.....	5 - 6 yrs.	10-12 yrs.	12-13 yrs.
		Second bicuspid	2¼- 2½ yrs.	.....	6 - 7 yrs.	11-12 yrs.	13-14 yrs.
		First molar	at birth	Sometimes a trace	2½- 3 yrs.	6- 7 yrs.	9-10 yrs.
		Second molar	2½- 3 yrs.	.....	7 - 8 yrs.	11-13 yrs.	14-15 yrs.
		Third molar	8 -10 yrs.	.....	12 -16 yrs.	17-21 yrs.	18-25 yrs.

begins in the bicuspids, between 2½ and 3 years in the second molars, and between 7 and 10 years in the third molars. The enamel of the first permanent molars is completed at three years, that of the incisors at four to five years, that of the cuspids and bicuspids at five to seven years. (For eruption time and root formation see Table.)

Disturbed Calcification of the Permanent Teeth. Enamel hypoplasia of the permanent teeth is due to postnatal influences which disturb the calcium metabolism. The most important disturbances are rickets (Vitamin D deficiency) and tetany (convulsions; disturbances of parathyroid function and of calcium balance). Disturbances and sickness during the first year of life may cause hypoplasia of the incisal or occlusal portion of the following teeth: $\frac{6\ 3\ 1\ \ 1\ 3\ 6}{6\ 3\ 2\ 1\ \ 1\ 2\ 3\ 6}$; if the disturbance extends into the second year of life, the upper lateral incisors may also be hypoplastic. The bicuspids and second molars are rarely hypoplastic, probably because severe metabolic upsets are less common after the age of two years. Only those portions of the teeth can become hypoplastic which are calcifying at the time of the disturbance.

Mottled Enamel. Mottled enamel is a chalky white, brown, or black discoloration of the enamel of the deciduous and permanent teeth. In severe cases the teeth are pitted. It is caused by the presence of soluble fluorine salts in the drinking water in a concentration of from 1 to 14 parts of fluorine per million (1 to 14 milligrams per liter). Only the developing portion of the teeth is affected; once enamel formation is completed fluorine does not noticeably affect the tooth structure.

Negative Evidence Concerning Calcium Withdrawal from Teeth. In scientific literature the statement is frequently encountered that bones and teeth are "storehouses of calcium from which calcium may be withdrawn." This statement is correct so far as the bones are concerned, but incorrect with regard to the teeth. Calcium from the skeleton can be mobilized either by osteolytic or osteoclastic activity. ***No such mobilization of calcium from the teeth has ever been demonstrated.*** On the contrary, all experimental evidence indicates that the calcium content of the teeth is very stable. There is probably a slight physiologic increase in the calcium content of the dentin throughout life; for the enamel no alteration of the calcium content has ever been demonstrated. The only way in which enamel can be altered in structure or composition is by factors originating *outside* of the tooth (abrasion, erosion, caries, mineral acids, etc.).

Caries and Pregnancy. There is no conclusive statistical evidence that the incidence of caries during pregnancy is greater than the incidence in non-pregnant women of corresponding age. A possible increase of caries during pregnancy would have to be explained by such factors as lack of care, gingivitis, vomiting, or increased intake of carbohydrates; there is no evidence of calcium withdrawal from the mother's teeth.

Calcium Therapy in Dentistry. From the foregoing it is evident that attempts to improve the structure of erupted teeth by means of calcium and phosphorus or vitamin preparations are useless. Even if the calcium were assimilated by the body there is no way in which it could be incorporated into the enamel of fully formed, erupted teeth.

The important period for the structure and composition of the enamel of the permanent teeth is from birth to the age of five or six years. Especially significant with respect to the first permanent molars are the first two years of

(*Concluded on page* 117)

The Illinois Dental Journal

Editor
HAROLD W. OPPICE
Associate Editors
MAYNARD K. HINE — WILLIAM G. SKILLEN
Contributing Editors
WILLIAM P. SCHOEN, JR. — CHARLES F. DEATHERAGE

• EDITORIAL •

Vacancies Left Behind

Here is a toast that I want to drink
To a fellow I'll never know—
To the fellow who's going to take my place
When it's time for me to go.

I've wondered what sort of a chap he'll be
And I've wished I could take his hand,
Just to whisper, "I wish you well, old man"
In a way he'd understand.

I'd like to give him the cheering word
That I've longed at times to hear;
I'd like to give him the warm handclasp
Whenever a friend comes near.

I've learned my knowledge by sheer hard work
And I wish I could pass it on,
To the fellow who'll come to take my place
Some day when I am gone.

Will he see all the sad mistakes I've made
And note all the battles lost?
Will he ever guess the tears they caused
Or the heartaches which they cost.

Will he gaze through the failures and fruitless toil,
To the underlying plan
And catch a glimpse of the real intent,
And the heart of a vanquished man?
—Author Unknown.

On the accustomed pages will be found notices of the passing of Eugene K. Blair and Rudolph Kronfeld—respected, distinguished and beloved members of our Society. It is but fitting and proper that the JOURNAL pay respect to these men with more than the usual notices of death.

The one, Dr. Blair, may not have been the oldest dentist in Illinois, but his 63 years of active and successful practice constitute a record not matched by many in our profession. His success can be characterized as typical of that attained by many other pioneers of Illinois Dentistry—it came the hard way. Attendance at high school and college were dependent on funds earned outside study and recitation hours. His activities in the interest of the organized profession were many and varied, as can be attested by a review of the archives of our Society. Services rendered in the form of continuous membership, attendance at annual meetings, essayist and clinician, committee member and officer, all, will forever redound to his honor and glory.

The other, Dr. Kronfeld, although taken in the first flush of middle age, had achieved extraordinary recognition as a teacher and author in the subjects of dental

histology and histopathology. Coming to the United States in 1929, fresh from the University of Vienna and three years' service in the laboratories of Dr. Bernard Gottlieb, he had a meteoric rise to fame in the field of dental research. As a teacher in the Chicago College of Dental Surgery for the past nine years he was revered alike by both student body and faculty. As author of two dental texts and co-author of a third, his knowledge was respected by all who came under the influence of his teachings.

Each of these contrasting yet similar lives has contributed much to the advancement of dentistry; the one in the fields of general practice and society organization, the other in the specialties of education and research.

The poem quoted in the beginning was read at the request of Dr. Blair at his funeral. It could well have been read at the last rites of Dr. Kronfeld. It typifies the characters of both men and bespeaks of one that the dental profession may never find, someone to fill the vacancy each has left behind.

Radio Broadcasts

Educating the public to the necessity of preventing dental diseases as well as to the need for treating their ill effects is being advanced on many fronts. Not the least of these is through the medium of the radio.

The American Dental Association has produced and broadcast dental health messages for the past ten years, largely over Station WBBM, Chicago outlet for the Columbia Broadcasting System. These broadcasts were from five to fifteen minutes in length and were given weekly or semi-weekly, as available time permitted. The A. D. A. has compiled over 250 different dental radio programs that are available to its membership in mimeograph form. During the past two years 50,000 copies of these broadcasts have been furnished to component societies. The dentists in many parts of Illinois have found these talks especially helpful in their public relations work. Station WDZ, Tuscola, Illinois, received 300 requests for a booklet on "Care of the Teeth" as the result of a free offer made following a dental program.

Especially interesting and effective dental programs of the air are sponsored by the Connecticut State Dental Association, the Oral Hygiene Committee of Greater New York, the Dental Division of the New York City Department of Health, the Southern California and California State Dental Associations, the Texas Dental College, the New Jersey State Dental Society and the Wisconsin State Dental Association.

We in Chicago have been tremendously impressed with the interesting and convincing messages broadcast over WGN each Friday afternoon on the "Dr. Lawrence" program, which is sponsored by the Chicago Dental Society and written by our good friend and fellow dentist, Bill Kirby.

Two dental programs of unusual interest will be broadcast in connection with the celebration of Dentistry's Centennial. On Monday evening, March 11, 7:05 Central Standard Time, Arthur H. Merritt, President of the American Dental

Association, will deliver a five-minute message to the public over the National Broadcasting System's Blue Network. On the following evening, March 12, 9:15 Central Standard Time, the Columbia Broadcasting System will present a coast-to-coast thirty-minute program entitled "Americans at Work—The Dentist."

The beneficial effects of these broadcasts, past and future, although generally obvious, can never be tabulated specifically. Certainly there are many who have learned valuable lessons in dental health from this source. We believe it is a primary and most important duty of the dental profession to repeatedly tell the story of dentistry to the public. There are those who prattle of "dental sales talks" and of "selling more dentistry to the public." Such terms have no place in a dental vocabulary or in the economic scheme of a dental practice. Good professional services need no "selling." The public does need, however, continued and more intensive education on the manner of preventing dental diseases and the necessity of receiving good dental care when preventive measures are ignored or become partially ineffective.

On to Baltimore*

This is the month of our Centennial Celebration. In every state in the Union, the members of the dental profession are coming together in their local organizations to celebrate the birth of American dentistry as an organized profession. It is meet and right that they should do this, for never again in the life of any living member will there be given an opportunity of like importance. The purpose of these local celebrations is twofold: first, to make it possible for every member of the profession to actively participate in celebrating in his local dental society an event of first importance in the history of the profession, and, secondly, to take advantage of these local gatherings, to encourage attendance at the meeting in Baltimore, March 17-20. Every member of the profession, no matter where he is located, should make preparations to be present.

There has been prepared a program that is unique in the annals of dentistry. No effort or expense has been spared to make it outstanding in its excellence. Fifty-four essayists, representing every section of the United States, will contribute of their knowledge and experience to the eighteen scientific sections, each of which will be presided over by an honorary chairman and vice-chairman.

Men of distinction outside of the profession will address the general sessions. A pageant depicting the progress of dentistry from its birth to date will be given on two successive evenings.

An historical and scientific exhibit such as has rarely if ever been equalled at any dental gathering will be on display during the entire celebration. The manufacturers' exhibit will also be outstanding, with an unusually large number of exhibitors. Too much credit cannot be given to the Centenary Committee for

*Article released for simultaneous publication in *Journal of the American Dental Association* and component society publications.

the magnificent program they have prepared for this occasion. By their unselfish service they have placed the entire profession in their debt.

Nothing remains to make it an unqualified success except widespread attendance on the part of the profession. As President of the American Dental Association, I extend to you a cordial invitation to be present. Indeed, I urge you to do so. It should prove the greatest event in your professional life. To miss it is to miss an opportunity of a lifetime. Meanwhile, use your Centennial seals, and if you have not already done so, *send in your contribution* to the Centennial Committee. *This is important.* And now

ON TO BALTIMORE!

Arthur H. Merritt, President
American Dental Association.

Draw Your Own Conclusions

The purpose of the proposed amendment to the By-laws of the Illinois State Dental Society (see page 116) may not be quickly apparent to the average member. It is to be found in the italicized phrase of the following quotation from the proposed amendment: "The annual dues shall be four dollars per member *plus whatever amount may be designated from time to time as the annual dues in the American Dental Association.*" In other words, the yearly dues in the State Society would remain as before—four dollars—but should the American Dental Association decide to increase its dues, by two-thirds majority vote of its House of Delegates at the coming session or any future session, the By-laws of the Illinois Component would be in order to accommodate and collect such an increase. It is obvious that all must favor the purpose of the amendment, even though some may be opposed to raising the dues of the American Dental Association.

We have long ago said our piece about favoring the proposed $2.00 increase in American Dental Association dues. Recently, the following table of dues and initiation fees paid by various union and professional organizations came to our desk. We publish it without comment.

	Dues	Initiation Fee
Carpenters	$ 1.85 per month.	$120.00
Electricians	$ 1.00 per month.	$10.00
Garage Attendants	$ 1.00 per month.	$2.00 to $15.00
Oil Sta. Attendants	$ 1.00 per month.	$2.00 to $15.00
Painters	$ 2.00 per monht.	$100.00
Plasterers	$ 1.50 per month.	$125.00
Chiropractors	$ 6.00 per year.	$60.00
Osteopaths	$10.00 per year.	None
Bar Association	$15.00 per year—in practice less than 2 years. $25.00 per year—in practice 2 to 5 years. $37.50 per year—in practice 5 to 10 years. $50.00 per year—in practice over 10 years.	None
Optometrists	$15.00 per year.	None
Physicians	$13.00 per year—state and local. $ 7.00 per year—national.	None
Dentists (Illinois)	$ 2.00 to $5.00 per year—local. $ 4.00 per year—state. $ 4.00 per year—national.	None

• *HERE & THERE* •

Soft-spoken, unassuming, Rudolph Kronfeld has died. A brilliant pathologist, he was the victim of one the unsolved pathologies of modern medicine—a bitter mental load for such a great scientific mind to bear over a period of time. Of his professional accomplishments it is hardly necessary to write for they were many and of course they remain a living monument to his ability.

Since 1929, when Dr. Kronfeld came to America from Vienna, he has written innumerable articles, given hundreds of lectures on dental pathology and related subjects; in this time he has also published a recognized text on Dental Histology and one of the finest Dental Pathology books ever written. The professional ability of this scientist therefore, is so well known, that it needs no lauding.

What we wish especially to give testimony to here is this man's personal virtue of patience with others, his kindness, his scientific insight, his ability of staying at numerous jobs quietly until they were acocmplished to the minute detail. We are proud that we knew Rudy Kronfeld, and with hundreds of others we feel that we have lost a wonderful friend.

H & T

The Chicago subway, which is rapidly progressing from a probability to an actuality, is one of the engineering wonders of modern times. Some of the early tunneling caused minor cave-ins and cracks to appear on the surface above the work. Now the engineers are using a tremendous steel "Shield" which will eliminate the cracks. This shield might be compared to a huge, round biscuit-cutter, of the same diameter as the subway; the cutter is pushed ahead of the work into the clay, a few yards at a time, by hydraulic jacks. Then this amount of clay is scooped out of the inside of the shield, the permanent lining built in to this exact dimension, allowing for no settling, and the process repeated. This biscuit-cutter or shield is a cheap affair costing only $250,000. When the tunnel is completed the shield must be scrapped as it was built to exact dimensions for this one job.

H & T

At the coming fifty-seventh annual alumni banquet of the Chicago College of Dental Surgery, on April 15th, the classes of 25, 35, 45 and 50 years ago will be honored. The class of fifty years ago, which originally numberd 60 members, now boasts 14 active members.

H & T

Bill Osmanski, hard-hitting former Holy Cross full-back, now with the Chicago Bears professional foot-ball team, is a dental student at Northwestern University. It might be said that Bill is *playing* his way through college.

H & T

The midwinter meeting of the Chicago Dental Society was a great success from all angles. Total attendance was 11,227 persons. Of this number 5,507 were

dentists; the remainder were physicians, nurses, students, family members of dentists, assistants, hygienists, laboratory employees, a few guests, and exhibitors.

H & T

G. J. Allen of Peoria is dentist to Robert Wadlow, the largest human being known to science. Young Wadlow is twenty-one years of age, eight feet nine and one half inches tall, weighs 490 pounds and wears a size 36 shoe. His teeth, except for the large size of each individual tooth and of the whole arch, are what would be termed normal. Imagine what kind of a meal a young fellow of these dimensions would require three times a day!

H & T

This month there is a definite scarcity of personal items about the membership; either the Illinois boys are becoming colorless or we are losing our snoop value. K. C. Edmonson, feature editor of the Peoria District Bulletin, is just back to pluggin' cavities again after a session with the flue bugs. . . . Joe Restarski has moved his office. . . . H. D. Fullenwider practices dentistry in Springfield. . . . Ed Ratliff is Editor of the Bulletin of the G. V. Black District Dental Society . . . the following is a simple statement of fact: Bill Phillips attended the dance at the Stevens Hotel during the midwinter meeting; he danced all but two dances that Wednesday evening; Thursday and Friday his legs bothered him so badly that he stayed home from the office; now he gets up each morning one half hour early so that he can run one and one half blocks in Jackson Park; this is in preparation for next year. . . . Willard Goldring of Marengo and Bill De Wolf of Woodstock come all the way in to the North Side meetings of the Chicago Dental Society. . . . Irv Stransky drove to Mexico city and back on the recently completed highway. . . . August Swierczek, the rascal, was Chairman of the Ladies Entertainment Committee of the Chicago Dental Society. . . . Tsk! Tsk! For the last regular meeting of the North Side Branch all the invitations were mailed out addressed to *Mr.* So-and-So; we've slipped professionally. . . . Evart Archer is learning farming by osmosis from Earl Graham, that veteran dirt farmer. . . .

H & T

Nelson Eddy, baritone of the movies and the radio, gave a one night concert stand at the Chicago Civic Opera House. The Civic Opera, which seats a handful or so, literally bulged with enthusiastic people, even the orchestra pit being filled. Although Mr. Eddy did not sing "Ring Around the Rosie," if he had that too would have brought him a five minute round of applause. We say this meaning in no way to detract from this great and popular singer, but only to give you some idea as to what his popularity is. Of his fourteen regular numbers and nine encores we liked especially well the following: "The Wayfarers Nightsong"; "Staendchen", the beautiful Schubert Serenade; the stutterer, "Wenzell's Song", from the Bartered Bride; "Eventide"; and the melodious "Sweetheart."

Wm P. Schoen. h.

• *ANNUAL MEETING* •

PRESIDENT

The Abraham Lincoln Hotel, Springfield, Illinois, will be the scene of activities of the Seventy-Sixth Annual Meeting of the Illinois State Dental Society on May 13, 14, 15, 16, 1940.

BOULGER

This meeting has been particularly well organized. It is the culmination of well-laid plans by many committees, each of which has given generously of time and effort to make a real contribution to the record of our society. Everyone can find in the scientific program some phase of dentistry that appeals to him, from the care of the child patient to the construction of full dentures. Ample opportunity is afforded the golfer, the trap shooter and the bowler to combine recreation with education.

ANNOUNCES

Springfield provides a delightful climate at this time of year; so meet with your fellow practitioners and enjoy four days of Spring in Springfield; May 13, 14, 15, 16, 1940.

Earl P. Boulger
President, Illinois State Dental Society

•

PRESIDENT

The G. V. Black District Dental Society is pleased to extend to all members of the Illinois State Dental Society a warm and cordial invitation to attend the Seventy-Sixth Annual Meeting in Springfield.

GREEN

The various committees of the State Society and our District, who have been designated to prepare this meeting for you, have been industriously active for many months. They have had the complete cooperation of our Civic and Business interests in Springfield and all the details will be completed when the meeting opens.

INVITES

Springfield has long been recognized as an ideal convention city with its central location, its ample hotel facilities, the seat of our State government, its world famous Lincoln shrines, and its civic minded and hospitable citizenry. Springfield invites you and your ladies.

John W. Green
President, G. V. Black District Dental Society

• *ANNUAL MEETING* •

PRELIMINARY PROGRAM

MONDAY, MAY 13

EXECUTIVE COUNCIL MEETING,
9:00 A. M.—Abraham Lincoln Hotel

ANNUAL GOLF TOURNAMENT,
All Day—Illini Country Club.

ANNUAL TRAP SHOOT,
1:00 P. M.—Mather's Farm.

ANNUAL BOWLING TOURNAMENT,
1:00 P. M.—Capitol City Alleys.

ANNUAL SPORTS DINNER,
7:00 P. M.—Illini Country Club.

TUESDAY MORNING, MAY 14

FIRST GENERAL SESSION,
9:30 A. M.—Ball Room Abraham Lincoln Hotel.

Invocation.
Address of Welcome—Response.
President's Address.
Discussion of President's Address
Committee Reports:
Division of Dental Health Education, Illinois Department of Health.
Infraction of Laws.
Necrology.

TUESDAY NOON

COMPONENT SOCIETY OFFICERS' MEETING AND LUNCHEON,
John J. Donelan, Chairman.

PAST PRESIDENTS' LUNCHEON,
Ben H. Sherrard, Chairman.

• *ANNUAL MEETING* •

TUESDAY AFTERNOON

LECTURE SESSION,

1:30 P M.—Ball Room.

"The Important Factors to Be Considered in the Correct Design and Construction of a Partial Denture."
Lester W. Boyd, Chicago.

1:30 P. M.—Palm Room.

"Children's Dentistry."
Ruth Martin, St. Louis.

3:00 P. M.—Ball Room.

"Causes and Treatment of Osteomyelitis of the Jaws."
Frederick F. Molt, Chicago.

3:00 P. M.—Palm Room.

"Mechanical and Biological Problems of Occlusion Ecountered in Dental Restorative Work."
Richard A. Jentzsch, Chicago.

TUESDAY EVENING

ANNUAL BANQUET,

7:00 P. M.—Abraham Lincoln Hotel.

Toastmaster—President Earl P. Boulger.
Address—Dr. Charles Copeland Smith.
Entertainment.
Dancing.

WEDNESDAY MORNING, MAY 15

COMPONENT EDITORS' MEETING AND BREAKFAST.

LECTURE SESSION,

9:30 A. M.—Ball Room.

Common Problems in Full Denture Construction:

"Mouth Preparation."
George C. Pike, Chicago.

"Impression Taking and Establishing Centric Relation."
Charles S. Helm, Rockford.

"Esthetics."
John B. LaDue, Chicago.

"Immediate Dentures."
E. Byron Kelly, Chicago.

• *ANNUAL MEETING* •

WEDNESDAY NOON

Life Members' Luncheon.
Dental Health Education Luncheon.
Illinois Dental Assistants' Association Luncheon.

WEDNESDAY AFTERNOON

Lecture Session—Ball Room.
2:00 P. M.—"Crown and Bridge."
Thomas J. Davis, St. Louis, Mo.
3:00 P. M.—"Practical Suggestions in the Use of Amalgam."
Arne F. Romnes, Chicago.
4:00 P. M.—"Periodontia."
W. J. Charters, Des Moines, Ia.
Dental Health Education Session—Parlor J.
Sponsored by the Committee on Dental Health Education and the Division of Dental Health Education of the Illinois State Department of Public Health.
2:00 P. M.—"The Relation of the Dentist to the Illinois Dental Health Educational Program."
Florian A. Neuhoff, Belleville.
2:15 P. M.—"Some Phases of Children's Dentistry in General Practice."
H. G. Maxey, Springfield.
3:15 P. M.—"Children's Dentistry as Taught to Dental Students."
Elsie Gerlach, Chicago.

WEDNESDAY EVENING

Second General Session,
7:00 P. M.—Ball Room.
"Psychiatry."
Francis P. Gerty, M. D., Medical Director of the Cook County Psychiatric Hospital.
Annual Business Meeting.
Election of Officers and Councilmen.

THURSDAY MORNING, MAY 16

General Table Clinics,
9:00 A. M.—Ball Room.
Final General Session,
11:30 A. M.
Unfinished Business.
Installation of Officers.
Adjournment.

• ANNUAL MEETING •

Two Prominent Speakers Featured on Evening Programs

The Program Committee for the year 1940 has been very fortunate in securing Dr. Charles Copeland Smith for the Tuesday evening speaker. Dr. Smith was educated at the University of Manchester, England, and he has a degree of Ph.D. from that Institution. He is now a citizen of the United States and has made his home in or around Chicago for many years. Dr. Smith started, with Bill Hay of radio fame, the first Radio Round Table and for many years wrote a daily column for the *Chicago Daily News* on social subjects. He has successively been a minister, sociologist, economist, author, radio commentator and lecturer, and is ranked as one of Chicago's outstanding speakers. After Dr. Smith's talk the Ballroom will be cleared and a delightful evening of dancing will be enjoyed.

Dr. Francis P. Gerty, one of Chicago's prominent Psychiatrists, will be the speaker on Wednesday evening. This talk will deal with problematical cases in which the dentist may become involved. Incidentally, Dr. Gerty is Professor and Head of the Division of Nervous and Mental Diseases at Loyola University School of Medicine, Medical Director Cook County Psychiatric Hospital, and is the attendant neurologist at a great many hospitals in the city. He is exceptionally well qualified in his subject and the committee feels quite fortunate in securing him.

The April JOURNAL will have the complete program for the entire meeting, which, we hope, will be attractive enough to draw a record crowd to Springfield May 13th to 16th, inclusive.

Willis J. Bray, Program Chairman.

General Clinics of Practical Value

A program of clinics is usually the most popular part of any dental meeting because practitioners, by spending a few moments, can obtain a maximum of sound and practical dentistry. Many new technics or refinements of old ones are demonstrated and these can be later applied in the dentist's own office, often with a definite saving of time and effort.

The Clinic Committee has recognized these values by attempting to reproduce them in the program which it is forming for the coming annual meeting of the Illinois State Dental Society, which will be held in Springfield during May. Members of the committee have been in attendance at all important dental meetings in the vicinity in order to procure the most practical and effective table demonstrations.

No matter how large or how limited the interest of the individual practitioner may be, he will find something of value in the General Clinics of the May meeting. Every branch of dentistry will be represented, but emphasis will be placed on those phases which have attained special popularity in the past.

Special attention is also being given to the spacing of the clinics in the Grand Ball Room and Palm Room so that clinicians and visitors will have a better oppor-

tunity to witness the demonstrations without crowding. This will enable the dentist to see the methods he has heard described put to work in actual practice.

The annual clinic session will be held on Thursday morning of the meeting. The program will begin at 9 a. m. and continue until noon. The committee believes a visit to the General Clinics of the 76th meeting of the Illinois State Dental Society will be repaid with a large amount of good, practical dentistry.

Melford E. Zinser, Clinic Chairman.

Scientific Exhibits

The scientific exhibits will be held in the main floor lobby of the Abraham Lincoln Hotel adjoining the registration booth. Those of a special nature which require moving pictures or lantern slides will be held in private rooms on the fourth floor adjoining the main auditorium. All exhibits will be of either scientific, health, or historical value. Don't fail to pay them a visit.

B. B. Beatty, Chairman, Scientific Exhibits.

Commercial Exhibits

No dental convention or meeting is complete without the color and display of the latest in commercial materials and equipment. This year a most complete and unique arrangement of commercial exhibits will be presented by the various dental manufacturers and laboratories in an ideal location just off the main lobby in the Lincoln Room of the Abraham Lincoln Hotel.

Continued support of these commercial exhibitors by all the members of our Society will add greatly to the success of future meetings.

Anton Gerster, Chairman, Commercial Exhibits.

Sports Program

Monday, May 13, will again be devoted to the pleasure of the sport enthusiasts among our membership. Promptly at 9 o'clock all golfers will assemble at the beautiful but difficult Illini Country Club course for the annual tournament under the direction of Russell Blunk.

Plans have all been completed by Chairman R. W. Blanchard for the 10th annual trap shoot. It will be held at the Mather Farm, ½ mile south of the Springfield Airport on Route 4. A great sport—an ideal location—everyone is welcome.

More and more dentists are taking advantage of the opportunity afforded at the annual meeting to bowl in competition with their fellow practitioners from over the state. Complete announcement and entry blank are to be found in the "Society Bulletins" of this issue. Read the announcement; fill out the entry blank and mail to Chairman Holz at once.

"Eat, Drink and Be Merry" is the slogan adopted by Bob Curran, chairman of the Sports Banquet Committee. This committee promises to outdo all previous commitees by offering all sportsmen the finest in food, stimulant and entertainment. To miss this party will be to regret it the rest of your life. This most important of all extra-curricular events is scheduled for Monday evening, May 13, at the Illini Country Club.

Hotel Reservations

Early hotel reservations are advised, as many have already been made.

Please send your reservation to the hotel of your choice or to Dr. H. P. Singler, 606 Myers Building, Springfield, Illinois. Should you choose a hotel that is sold out, a reservation will be made for you at another and you will be so advised.

SPRINGFIELD HOTELS AND RATES

	Rooms	Single	Double
Abraham Lincoln	350	$3.00 to $5.00	$5.00 to $7.00
Leland	250	$1.50 to $4.00	$2.50 to $7.00
St. Nicholas	250	$1.50 to $4.00	$2.50 to $6.00
Empire	176	$1.50 to $2.00	$2.00 to $3.00
Illinois Hotel	100	$1.25 to $2.50	$2.00 to $3.50
Elks Club	90	$1.50 to $2.00	$2.50 to $3.50

There are numerous other smaller hotels available if desired.

CHICAGO MIDWINTER MEETING SCORES AGAIN

A BRIEF SUMMARY

By WILLIAM G. SKILLEN

"Go, speed the stars of Thought On to their shining goals;—"

HAVING SAFELY PASSED from the early stages of its infancy, through the period of adolescence and into the full bloom of its maturity, the Chicago Dental Society has begun its march toward the century mark. Although deeply enriched by the wisdom that age and experience bring, it has preserved the vitality and jovialness of spirit which have so characterized it since its inception.

At each birthday celebration, those representing the past, the present and the future intermingle, each gaining something, each giving something in goodfellowship and discourse. Perhaps it is this which accounts for the success and evergrowing popularity of these occasions.

The attendance this year came close to bettering the last by a thousand, with a registration, to be exact, of 11,227. Of this total, 2,642 represented the Chicago area, with 631 coming from other parts of Illinois. This means that 7,954 individuals thought well enough of this meeting to travel relatively long distances to take it in. What an opportunity this should afford for an all-around get-together of varied personalities, from varied localities, bringing varied thoughts, feelings and experiences, ready to be shared with those desirous of seeking them out. Perhaps as one grows older, he is more sensitive to this picture and appreciates it more fully. The younger man may well profit by recognizing these potentialities. But this is generalizing pretty much and perhaps some more specific references as to what went on at the meeting would be better appreciated. However, it did seem that a somewhat different atmosphere prevailed this year, difficult to put a finger on with exactitude, but in some way and despite all the joviality which cropped up from time to time, the meeting took on an even more serious tone than heretofore.

In going from one section to another, listening in for a few moments here and there, and glancing over the titles of the talks scheduled in the program, it seemed that the fundamentals, the plainer and more substantial, less rhetorical things, for the most part, enjoyed the greatest popularity. There appeared to be very little of the more or less usual running in and out of individuals seeking something more to

their liking—in other words, the crowds stayed put, absorbed in the particular subject under discussion.

The story of amalgam was told again before packed houses. Indeed, such was the enthusiasm, it was reported that on one occasion, because of the lateness of the hour, the lights had to be turned out to dispose of both audience and essayist. And, if there is anything in dentistry with almost an age long history, it is that of amalgam.

Much of the same thing was true at the Orthodontia Section next door. Here too, the fundamental scientific and practical angles of things seemed to occupy a large proportion of the program with an attentive over-flow present. But it was especially gratifying to find that at the other end of the third flood, the Section on Children's Dentistry was holding up even better than last year. As was said at that time, this subject is of tremendous importance, and it is hoped it will continue to receive the consideration it deserves.

The Grand Ballroom, a place of immense capacity, did not seem too empty at any one visit. The only talk heard in its entirety, was a very colorful and instructive discussion of mouth and face lesions, although it was reported that an interesting and well illustrated presentation of the repair of cleft palate was of equal attraction.

It was learned in the Periodontia Section, that a certain puzzling type of pyorrhea was probably "idiopathic" without any particular proof being given for the conclusion, while in the Full Denture room, cartoons depicted the many faces seen in public places which upon becoming edentulous all too frequently receive the same type of artificial denture—"the tombstone type."

Somewhere along the line a report was received that mixed fillings of gold and amalgam in a mouth do not ncessarily produce galvanic currents, unless perhaps, one is allergic to the same. It was said that the discussion of this question almost resulted in a knock-down, drag-out fight.

The subject of caries, of course, occupied quite a space on the program. In this discussion, it would seem, that a long suspected fact came to light, that there is no certain preventitive of this disease. However, it was brought out that a moderation in the consumption of sweets will do much in this direction. These ideas constituted one of the head lines of the day.

Perhaps it's the hard times "or something" which caused the jam at the sessions on Practice Management, for in spite of the spaciousness of the quarters, not even standing room was to be found. Perhaps it might be suggested, that if this subject is to be repeated and is likely to be as popular, that the Grand Ballroom would be a good spot for it.

In spite of the additional charge, the Limited Attendance Clinics could not take care of all those desiring admission. If this feature holds its popularity in the future, the only answer to the situation would seem to be that everyone must get there first. Certainly this is a vast improvement when one considers the experiences of previous years when one was lucky to be able to see the clinician's head, let alone hear his voice.

Someone should certainly be given great credit for the change in location of the Scientific Exhibits. Everyone agreed wholeheartedly that this was a wonderful improvement. Let's have it there again. Of course, this is just another of the many things which mark and are responsible for a steady progress.

In general, the commercial exhibits seemed to be more resplendent and eye-catching than ever before. There wasn't sufficient time, however, to take in all the details. Among the countless items of interest to the practicing dentist, those very expensive but long lasting diamond points, and the motor driven chair which operated up or down at the touch of a button, attracted considerable attention. The newer types of denture-base materials also occupied considerable space.

This review of a good meeting could not very well be terminated without mention being made of the consternation and sadness aroused by the announcment of the sudden death following a somewhat protracted illness, of Doctor Rudolph Kronfeld. The cancellation of the remaining session of the Periodontia Section was a very appropriate expression of the friendship and respect so many held for him.

• BOOK REVIEWS •

THE 1939 YEARBOOK OF DENTISTRY; *divided into five sections:* DISEASES OF THE MOUTH, PATHOLOGY AND RESEARCH, (Including Oral Hygiene and Periodontia), *edited by Charles G. Darlington, M.D., Professor of Pathology, New York University College of Dentistry:* OPERATIVE DENTISTRY, (Including Pedodontia and Public Health Dentistry), *edited by George W. Wilson, D.D.S., Professor of Operative Dentistry, Marquette University Dental School:* ORAL SURGERY, (Including Exodontia and Anesthesia), *edited by Howard C. Miller,* D.D.S.: PROSTHETIC DENTISTRY, *edited by Walter H. Wright, D.D.S., Ph.D., Associate Professor of Prosthesis, School of Dentistry, University of Pittsburg:* ORTHONDONTICS, *edited by George R. Moore, D.D.S., M.S., Professor and Head of the Department of Orthodontics, School of Dentistry, University of Michigan. Cloth. Price $3.00. Pp. 799 with 534 illustrations. Chicago: The Yearbook Publishers Incorporated.*

This latest volume of the Yearbook of Dentistry, offers no exception to its three predecessors in the excellency and completeness of its contents and the satisfactory clearness, in general, of its illustrative matter.

For those who are not acquainted with the Yearbook, it may be pointed out that the aim of this work is to present concise, yet sufficiently complete and clear reviews of what are considered by the editors the most important articles which have appeared during the current year. In this volume the efforts of some 383 authors, representative of this country and Europe, are recorded, with brief but valuable comments on the part of the editors. Some 354 publications are included in the bibliography, of which 84 are foreign, 32 medical and the remainder American. Of the latter, the *Journal of The American Dental Association* claims 86, and the ILLINOIS DENTAL JOURNAL, 12, the latter being an increase over previous years.

The table of contents in the forepart of this book, and the excellent detailed index toward the end, together with an added list of the authors whose articles have been abstracted, affords the reader a ready means for finding any particular subject in which he may be interested.

From the above it may be deduced that a very wide variety of subjects has been covered. However, in general, all of the material has a practical application. Purely scientific articles are limited to those of such importance as to be worthwhile reading for the practitioner. It should be pointed out, also, that not always are two sides of a story presented in any one volume. Therefore, it may be necessary to refer to previous numbers of this publication or to the original article for more complete information so necessary in planning the proper procedure.

This book should prove of inestimable value, not only to the individual practitioner, but to study groups looking for discussion material and interested in keeping in touch with the latest developments. It might also prove of value to the scientist, making him more aware of the problems and needs of the practical side of dentistry.

Wm. G. Skillen.

* * *

RADIO MANUAL—*A compilation of radio broadcasts for mouth health education. Published by the Oral Hygiene Committee of Greater New York, New York City, 202 pages, price $1.50.*

To one who is familiar with the high quality of material that has been prepared in the past by the Oral Hygiene Committee of Greater New York this manual is rather disappointing. With the number of excellent writers procurable and the amount of good material available in New York dental circles, every broadcast in this compilation should have been what the committee feels that it is: "of great value and assistance to those who are contem-

(*Concluded on page* 117)

• SOCIETY BULLETINS •

KNOX

The Knox County Dental Society met in regular session February 8th at the Galesburg Club. We had the largest attendance we have enjoyed for some time including a delegation of good fellows from Monmouth. There was a reason—Peters! After partaking of a large steak dinner and after attending to a few matters of business we had the great pleasure of listening to Dr. Wilfred L. Peters of Peoria tell of "The Problems of the Exodontist." Pete is an exceptionally genial good fellow and, boy! how he can talk! (never "peters out"). He gave a very interesting as well as instructive discussion, illustrated with lantern slides, of several case histories. Automobile accidents were responsible for the great number of facial fractures, according to Dr. Peters, but I wonder if the Peoria breweries and their products might not have something to do with this.

Our Society is planning a Centennial Dinner followed by a floor show for March 21st.

M. W. Olson,
Component Editor.

* * *

DECATUR

Oh! to be a man like Herbert Ely Williams! Then I could sit down and in a few minutes have a letter that would be informative, complete and to the point. I'm going to try to get a government subsidy for Component Editors. I'm beginning to think we deserve one. Not for the subject material (I beat you to that one) but for the mental and physical strain produced in writing one. With this big project on my mind and the political situation as it is I'm just about down. Darned if I know which band wagon to ride.

I hope everyone enjoyed the Chicago Meeting. I was very sorry that I couldn't go. I figured with my banker and after all was summed up I found that I could only stand about ten minutes of one of the good two hour lectures, costing a dollar as they did. Oh well! if I can get my Leghorns laying worth a dern this summer maybe I can make it next year.

Herbert Ely Williams, our speaker on February 9, was almost as good as we expected him to be, and that is saying a lot. He gave a fine humorous talk with just enough good horse sense included to make it a very successful evening. . . . A resume of the history of the Macon-Moultre Society was given by "cop-baiter" Foster Waltz. Times sure have changed, gentlemen. . . . Boys, our meeting on March 12 will be a dandy. The subject is "Some Interesting Facts About the Federal Bureau of Investigation." J. E. Clogg, of Springfield, member of the F.B.I., will be the speaker. If you have lived right, come and enjoy yourself. If you haven't —come anyway, we'll protect you.

H. H. Foster,
Component Editor.

* * *

G. V. BLACK

The regular February meeting of the G. V. Black District Dental Society was held February 8 at the Hotel Abraham Lincoln in Springfield. Dr. R. E. McBoyle of the Chicago College of Dental Surgery was the essayist of the evening. He spoke on the subject, "A General Consideration of Crown and Fixed Bridgework from the Present Day Viewpoint." The lecture was illustrated with slides and followed by a table clinic. Dr. McBoyle is well known to the members of our local Society, having lectured here several years ago and having many former students among our members. His teaching has perhaps influenced crown and bridgework locally more than any other one man. His ideas are modern, conservative and practical.

The dental program for the Springfield City Schools is progressing nicely under the direction of Dr. Harold Maxey. During the latter part of February a survey was made by members of the local society

of the children of the First and Second Grades. . . . The dental program of the Children's Service League has been worked out by that organization. Dr. Russel Blunk was elected to succeed Dr. George Thoma whose term had expired. A gift to the Society from Mrs. Ogden B. Munroe was gratefully received. It consisted of bound copies of the Dental Cosmos and Journal of the American Dental Association which were compiled and preserved by the late Drs. Grafton and Ogden B. Munroe.

The members of the G. V. Black Society were saddened by the news of the death of the dean of our local component, Dr. E. K. Blair of Waverly, who passed away February 2 at his home in that city. Dr. Blair was almost 84 years of age and had practiced dentistry for over 65 years. Dr. Blair was a civic leader in his community as well as an outstanding dentist A contemporary of Drs. Black and Gilmer, he had observed the progress of scientific dentistry since its beginning. Intensely interested in his profession he continued in active practice until within a few days of his death. His long and useful life should be an inspiration to every member of our profession.

Ed. Ratliff,
Component Editor.

* * *

T. L. GILMER

Among the dentists attending the Chicago Midwinter Meeting were Drs. King, L. H. Wolfe and Duncan of Quincy; K. I. Grimes of Barry; Amrine and Eales of Rushville; McLellan of Carthage; Berry of Pittsfield; Hufnagle of Clayton; and La Verne Myers of La Harpe. Several of these men enjoyed the hockey game between the N. Y. Rangers and the Chicago Blackhawks. Dr. and Mrs. L. H. Wolfe were fortunate in securing tickets for "The Man Who Came to Dinner" and "Abe Linclon in Illinois." . . . Dr. K. W. Haller reports that the work conducted by the Mellon Institute in comparing the teeth of residents of Quincy and Galesburg in respect to the role of fluorine in dental caries is being successfully carried out. . . . Drs. Busbey, Ernst, Haffner, Ringland, Schauf, L. H. Wolfe, L. M. Wolfe of Quincy and Ownby of Mendon were among those seen attending the fistic endeavors of the Golden Gloves marksmen in Quincy Feb. 5 through Feb. 8. . . . Dr. L. R. Main of St. Louis University spoke before the Quincy Study Club, Tuesday, Feb. 13 in the afternoon and evening, on "The Roentgen Ray in Everyday Practice." Thirty-one dentists attended the gathering under the chairmanship of Dr. Roy Ernst. . . . The next meeting of the Quincy Study Club will be held at 2:15 Mar. 12, unless the members are otherwise notified. A possible change is in view, inasmuch as the Dental Centennary Celebration will be held the night before. Dr. Harry Denen of Chicago will be the guest speaker, his topic being "Immediate Dentures," and Dr. H. R. Farwell will be the chairman. . . . On Monday, Mar. 11, members of the T. L. Gilmer Society will hold a Dental Centennary Celebration in collaboration with similar groups throughout the State. A dinner program is in view, beginning approximately at 6:30, at the Hotel Lincoln-Douglas. . . . While attending the Chicago Dental meeting, Dr. L. M. Duncan enjoyed several visits with his son, Kent, who is employed by the Harris Trust Company. . . . Dr. H. R Farwell spoke before the Marblehead P. T. A. Monday evening, Feb. 19. . . . Dr. R. W. Leavitt has been confined to St. Mary's Hospital for several days, having been stricken with the flu.

L. M. Wolfe,
Component Editor.

* * *

PEORIA

Basket-ball games, with two overtimes, "Golden Gloves" bouts, Symphony Concerts, not to mention "Gone With the Wind," have made this past month a very busy one. On the very first day at 8:00 A. M. (that's even earlier than he gets to his office) Dr. J. Malcolm Elson began his career as a married man when he convinced Miss Glenola Lockhart that two could live as cheap as one. We do not know the young lady, but from the picture in the paper it is easy to understand why he deserted the ranks of the bachelors. You know that has been hap-

pening quite a bit lately among the dentists. What is it that these boys have that Rhett Butler didn't?

Saw Dr. L. F. Carlin and Dr. and Mrs. J. F. Murray at the Bradley St. John's Basket Ball game. It was the same night as the St. Louis Symphony Concert here. So it seems the highbrows all went to the concert while the lowbrows took in the B. B. game. . . . Dr. S. B. LaDue of Chillicothe again acted as one of the officials at the Golden Gloves Contest. "Stan" is one of the veteran officials of the meet.

Dr. Harold L. Harris of St. Paul, Minn., presented a lecture and slides on the Fournet-Tuller Technique at the February meeting. There was a large crowd present and from the way the boys crowded around Wally Peters to pay their dues they must have liked the talk. . . . The Society has been growing again; here are the new members. Dr. R. J. Donovan, Mason City; Dr. E. P. Bouldin, 1419 S. Adams St., Peoria; Dr. F. Carlye Jones, 125 S. Jefferson Ave., Peoria (Reinstated); and Dr. E. J. Ackley, 242 N. Western Ave., Los Angeles, Cal.

Dr. L. H. Jacob is one of the directors of an organization known as "The Boys of the Old White School," which celebrated its 26th anniversary. It is composed of men who attended the old square brick structure which stood where the present building now stands. . . . On February 29th Dr. W. A. Johnston celebrated his 21st birthday. Dr. Johnston, now retired has practiced in Peoria for 58 years, and is the oldest living member of the Illinois State Dental Society. He served as its president in 1908. As this is written plans are being made for a celebration in his honor at the First Presbyterian Church of which he is also one of the oldest living members. No! That "21st" is not a mistake. Dr. Johnston is 80 years old. He was a leap year baby and so he has a birthday only once in four years. For that reason we want to wish him more than four times the usual "Many Happy Returns."

E. H. Mahle,
Component Editor.

CHAMPAIGN-DANVILLE

This Society will hold its regular spring meeting in Danville at the Greer-Lincoln Hotel on Monday, March 11th, afternoon and evening. The speaker for the afternoon session will be Dr. Roderick J. Gordon of Sturgeon Bay, Wisconsin; his subject, "Practice Management." . . . The annual election of officers will be held at 4:30 P. M. . . . The gala event of the entire year will take place at 6:00 P. M. in the form of a Centennial Dinner, observing, with other component societies, a "Century of Progress" for dentistry. An appropriate program for this occasion has been arranged. The dinner and evening sessions are open to the public.

Homer Peer,
Program Chairman.

* * *

CHICAGO

Superlatives in the form of adjectives or even adverbs are not sufficient to describe the Seventy-Sixth Midwinter Meeting. A reporter of a meeting like this might even become inebriated with the exuberance of his own verbosity (no charge for that one). Suffice it to say each year sees a new corps of workers and each year they produce results. With the subsidence of political activity there's reason to believe that more men will become interested in working for the dental society, as such, and we'll get the cream of the crop for committee appointments. It really looks like the dawn of a new era. Did you ever stop to realize, however, that no matter how many members take part in staging a meeting of this sort and no matter what their qualifications, it takes the sustained effort of the Central Office staff to really put it over. Jack Hollister is even now starting out to sign up exhibitors for next year. Jack deserves a lot of credit. "Well," somebody says, "He gets paid for it." Certainly he does, and he's worth every penny of it. . . . The limited attendance clinics, as predicted a year ago, have come to stay. Most of them turned away applicants. Only one sour note was heard and that was sounded by a Chicago man. He was overheard saying, 'How do they get that

way, charging a buck for these clinics? I pay my dues, that ought to entitle me to everything." Fortunately the vast majority of the membership doesn't feel that way about it. . . . Practice Management, a better title than Economics, by the way, drew a capacity audience and deserved it. Al Ryan and Joe Zielinski did a swell job. The speakers were well selected and covered the subject in a most interesting fashion. . . . The section in Oral Surgery and Medical Relations perhaps went a little high brow for the average dentist as witness the fact that a capacity crowd filled the Grand Ball Room when a symposium on the more common ailments was presented. 'Twas ever thus! . . . After a couple of years of Supper Dances, the Dinner Dance seemed a welcome restitution. At least the ladies appeared to enjoy the more formal type of entertainment. They still like to see their men folk in dinner clothes; which more adequately cover up the "dentist slouch," and that's an *a fortiori* argument. . . . There will be no Chicago Dental Society meeting next month. The only worry of the moment is the Annual Post-Mortem dinner which comes along in March. The worry being: how can a conscientious reporter write up a meeting like that when he's not present? Of course it probably could be arranged. The Stevens management wouldn't be apt to quibble over one extra dinner and besides look at all the publicity they've had in this column!

James H. Keith,
Component Editor.

* * *

PROPOSED AMENDMENT TO BY-LAWS

The following proposed amendment to Article IX, Section I, of the By-Laws of the Illinois State Dental Society, as presented at the 75th Annual Meeting for action at the 76th Annual Meeting (1939 Transactions, page 26) is herewith published in conformity with Article XV of the By-Laws.

"The annual dues shall be four dollars per member plus whatever amount may be designated from time to time as the annual dues in the American Dental Association. All dues are payable to the secretary of each component society who shall forward the same to the secretary of this Society. This shall include the annual subscription of THE ILLINOIS DENTAL JOURNAL and the annual dues in the American Dental Association."

Signed:
L. H. Jacob.
Lloyd H. Dodd.
John R. Bunch.
A. E. Glawe.
J. R. Blayney.

* * *

SPECIAL RADIO BROADCAST

On Tuesday evening, March 12th, the Columbia Broadcasting System will present a coast to coast, thirty minute program entitled "Americans at Work—The Dentist." This is one of Columbia's featured "Americans at Work" broadcasts and is their contribution to dentistry's centennial anniversary. All dentists and their friends should listen in to this program.

Remember the hour and date: Tuesday evening, March 12th, 9:15 Central Standard Time.

Lon W. Morrey, Secretary,
A.D.A. Publicity Committee.

* * *

ADDITIONAL RELIEF FUND CONTRIBUTIONS

The following have contributed to the A.D.A. Relief Fund since the Illinois Honor Roll was published in the JOURNAL.

Arnstein, A. L.
Atchison, J. A.
Berner, Russell F.
Bevan, W. F.
Biedka, Frank G.
Blaha, George W.
Burt, H. C.
Campbell, T. J.
Copley, H.
Costello, D.
Dahlberg, Albert A.
Devine, J. J.
Dodge, C. C.
Dyblie, J. H.
Fehrenbacker, F. J.
Figg, W. A.
Foster, R. A.
Frankel, D. A.
Gallegos, G.
Geffert, Carl S.
Goldstein, L. M.
Hoff, R. E.
Kamin, I. C.
Kjellerstrom, W.
Lambert, G. W.
Lane, J. B.
Lotz, M. F.
Lund, H. J.
MacLennan, R. R.
Moehmann, E. H.
Mulford, T. T.
Neuhoff, F. A.
Pickard, J. L.
Pollack, R. J.
Redpath, T. W.
Ruzic, J. F.
Schulz, B. F.
Seron, S. M.
Springer, L. G.
Teeling, Peter J.
Winiecke, E. L.
Woodworth, D. L.
Young, Noel S.
Zick, J. M.

* * *

CHICAGO DENTAL ASSISTANTS

Chicago Dental Assistants will meet Thursday, March 21, at Stevens Hotel. Dinner at 6:30 p. m. Meeting at 8:00 p. m.

3RD ANNUAL BOWLING CONGRESS ILLINOIS STATE DENTAL SOCIETY

The 3rd Annual Bowling Congress of the Illinois State Dental Society will be held in Springfield, Illinois, Monday afternoon, May 13th at the Capitol City Bowling Alleys located at 220½ East Monroe Street. This will be a handicap tournament as in previous years.

All interested in bowling are urged to plan now for their participation so that no delay will occur in arranging the time schedule. Fill out the entry blank below and mail to the Chairman at once.

ENTRY BLANK
THIRD ANNUAL BOWLING CONGRESS
ILLINOIS STATE DENTAL SOCIETY
MONDAY, MAY 13, 1940
SPRINGFIELD, ILLINOIS

Name .....
Address .....
Component Society .....
Present Average .....
Time I Wish to Bowl (1 to 5 p. m.).....
.....

Mail to C. W. Holz, Chairman, 709 Ridgely Bank Bldg., Springfield, Illinois.

* * *

RADIO MANUAL

(*Continued from page* 112)

plating public addresses. . . ." The manual does contain many good talks, but unfortunately, it also contains too many mediocre talks and far too many poor ones. Several of the writers present statements that have not been substantiated by scientific fact, while others handle statistics all too loosely. The binding is lovely, the foremat splendid and the purpose excellent, but having read it, one has the feeling that he has purchased a big, glossy, highly polished, red apple only to find that the meat is spotty. Of the 44 articles, one rates extra good, 24 good, 8 fair and 11 poor. It is suggested in the next edition that the committee pay as much attention to editing as they have to binding the contents. The twelve suggestions for radio speakers contained in the appendix are excellent and are recommended to all who contemplate doing radio work. *Lon W. Morrey.*

CALCIUM METABOLISM

(*Continued from page* 97)

life. During this formative period a diet well fortified in the necessary building elements is essential for strong, well-built teeth. The best natural source of calcium is milk. Vitamin D, which is necessary for the proper assimilation of calcium by the body, is found in milk, butter, egg yolk, cod liver oil, and other fats; if necessary it can be supplemented in the form of vitamin D concentrates.

Once the teeth have erupted they have just as good or just as bad a structure as they are going to have for the rest of their life.

BIBLIOGRAPHY

Chronology of Tooth Calcification: Dent. Cosmos 74: 1053, 1932; Jour. Am. Dent. Assn. 20: 379, 1933; 22: 1131, 1935; 22: 1521, 1935; 23: 675, 1936.

Neonatal Ring: Jour. Am. Dent. Assn. 23: 1946, 1936; 26: 18,, 1939.

Enamel Hypoplasia of Deciduous Teeth: Jour. Am. Dent. Assn. 26: 18, 1939.

Enamel Hypoplasia of Permanent Teeth: Jour. Am. Dent. Assn. 20: 379, 1933; Am. Jour. Dis. Child. 48: 714, 1934.

Mottled Anamel: Jour. Am. Dent. Assn. 20: 319, 1933; 21: 1421, 1934; 26: 900, 1939; Ill. Dent. Jour. 8: 194, 1939.

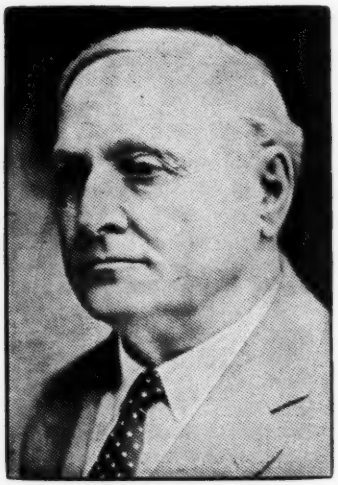
Caries and Pregnancy: Am. Jour. Obstet. and Gyne. 12: 710, 1926; 27: 679, 1934; Dent. Cosmos 75: 445, 1933; 77: 864, 1935.

Calcium Metabolism and Teeth: Jour. Am. Med. Assn. 110: 870, 1938; Ill. Dent. Jour. 8: 360, 1939; Schour in Gordon, Dental Science and Dental Art, Chap. II, 1938; Kronfeld, Histopathology of the Teeth, Chap. II, 2nd Edition 1939.

Calcium Therapy in Dentistry: Jour. Am. Dent. Assn. 23: 139, 1936.

1757 W. Harrison St.
Chicago, Illinois.

• OBITUARIES •



EUGENE K. BLAIR

1856—1940

Death came to one of the real pioneers of Illinois Dentistry Friday, February 2, when Dr. E. K. Blair, past president of the Illinois State Dental Society, died following a short illness. He was 83 years, 11 months and 10 days of age and had practiced his profession in Litchfield (18 months) and Waverly, Illinois, for over 63 years. The following modest obituary, prepared by Dr. Blair prior to his death, was read at his funeral.

Eugene K. Blair, D.D.S., son of George W. and Jemima Adams Blair, was born at Bunker Hill, Illinois, February 22, 1856.

He graduated from the Missouri Dental College (now the Dental Department of Washington University, St. Louis, Mo.) in March, 1875. After practicing eighteen months at Litchfield, Illinois, he moved to Waverly, Morgan County, September 20, 1876. At the time of his death, and for several years previous, he was the oldest graduate of the Washington Dental University, in active practice, having engaged in his professional work almost 65 years.

He was a graduate of the same school as Dr. G. V. Black and Dr. Thomas L. Gilmer, finishing his course one year earlier than these pioneers of dentistry. Dr. Black was well known in Jacksonville, and Dr. Gilmer practiced six years in Waverly, prior to Dr. Blair's locating here.

As a member of the National Dental Association, at Atlanta, Ga., he introduced a resolution, adopted the next year at Minneapolis, Minn., setting aside funds to be used in creating the present American Dental Journal.

Affiliated with local, state and national dental organizations since 1880, he served as an active member in all society work and was elected president of the Illinois State Dental Society in 1893. Having practiced more than 63 years in Waverly, he has been identified with the growth and business interests of the community, investing his earnings in adjacent farm lands, etc.

He served as a member of the Thirty-sixth General Assembly as a Representative from Morgan and Macoupin counties. The Waverly Public Library was organized in his office, and he was secretary for 26 years, terminating his membership in the library board of five members, when the Carnegie Library building was completed in 1913.

He was a member of the Congregational church and served for many years on its board of trustees. He was also affiliated with the I. O. O. F. and Knights of Pythias lodges.

Dr. Blair was united in marriage March 17, 1881, to Josephine M. Deatherage, who passed away at Passavant hospital, in Jacksonville, October 2, 1924. He is survived by two sons, Eugene K., Jr., and Carl, both of Waverly; and one sister, Mrs. M. E. Hooe, also of Waverly.

Rudolph Kronfeld
1901—1940

The thousands in and out of the profession who knew Dr. Rudolf Kronfeld have received a fearful shock as the news of his death has reached them. A man of exceptional energy and force of character, tempered with great generosity and kindness, he was respected and loved by everyone who knew or even met him.

His activities were many and varied. As teacher, author, scientist, practitioner, and essayist his loss is a calamity; as adviser, co-worker, and friend, his death is a tragedy. His interests were not only dental, however. For many years he had studied languages and their interdevelopment as a hobby. In addition to his native German and the English he had mastered so exceptionally well in the last few years, he was conversant with Italian and French and possessed a most unusual knowledge of Greek and Latin.

Until recently, when his illness forced him to abandon it, he was always intensely fond of outdoor life. He owned a home in the Indiana dunes and spent much of his spare time in hiking, swimming, skiing and the like. Horticulture and botany were also major interests of his and his knowledge of photography was above average.

In taking up dentistry he followed his father, Dr. Robert Kronfeld, who has contributed much to the German dental literature. In Austria, dentistry was a specialty of medicine; accordingly, Rudolf Kronfeld entered the University of Vienna, after his secondary schooling in the Gymnasium, and studied medicine. He received his M.D. degree in 1926 and immediately took up the work in dentistry.

Dental research attracted him and he became affiliated with Bernard Gottlieb in the laboratory at the Dental Institute. He was co-author with Gottlieb of a book on traumatic occlusion.

In 1929 Dr. Kronfeld came to Chicago and took up his duties as director of the department of research at the Chicago College of Dental Surgery. He also became professor of dental histology and histopathology and general histology.

In addition to his teaching and research work, he studied to obtain an American degree and received his D.D.S. in 1933. By further study he also earned a B.S. degree, conferred in 1935.

His rise to fame in his chosen field was swift and spectacular, but still represented thorough, solid achievement. He was the author of two textbooks, one on dental histopathology, now in its second edition, and one on dental histology. Both are recognized as distinctive and authoratative. Innumerable articles and essays and countless personal appearances in all parts of this country made him well known to dentists in every state.

Dr. Kronfeld was born December 10, 1901, in Vienna. He died February 13, 1940. He leaves his widow, Margaret North Kronfeld, his father and mother, now living in Canterbury, England, and his brother, Robert, Jr., a world authority on motorless flying, also living in England. To these bereaved members of Dr. Kronfeld's family, the Illinois State Dental Society wishes to extend heartfelt sympathy.

Paul K. Davis
1900-1940

Death came to Dr. Paul K. Davis on January 26, 1940, at the Veteran's Hospital of North Chicago, after an illness of several months.

Dr. Davis was born in Sterling, Illinois, a son of Dr. and Mrs. J. D. Davis. His earlier education was obtained in the local schools of Sterling and upon his decision to follow in his father's footsteps he entered Northwestern University Dental School. He was a member of the class of 1922. His early years of practice were spent in Rockford, but he later returned to Sterling where he was associated with his father until he became ill.

Dr. Davis was a brilliant conversationalist and the art of making friends came to him easily. He was a member of the Illinois State Dental Society, having joined this organization in 1939. He was active in the American Legion and the Rock River Lodge, A.F. and A.M. Surviving are his wife and parents.

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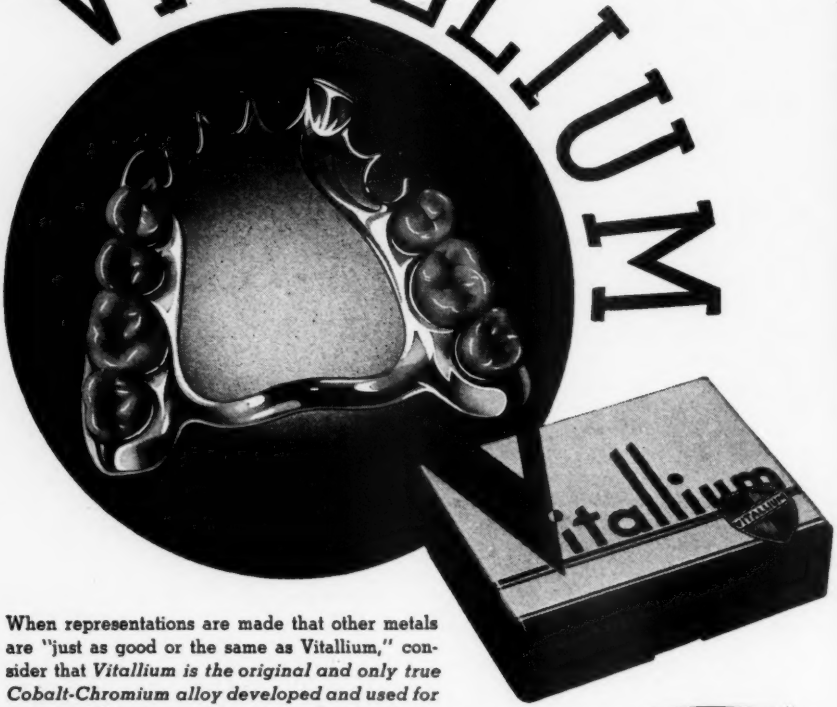

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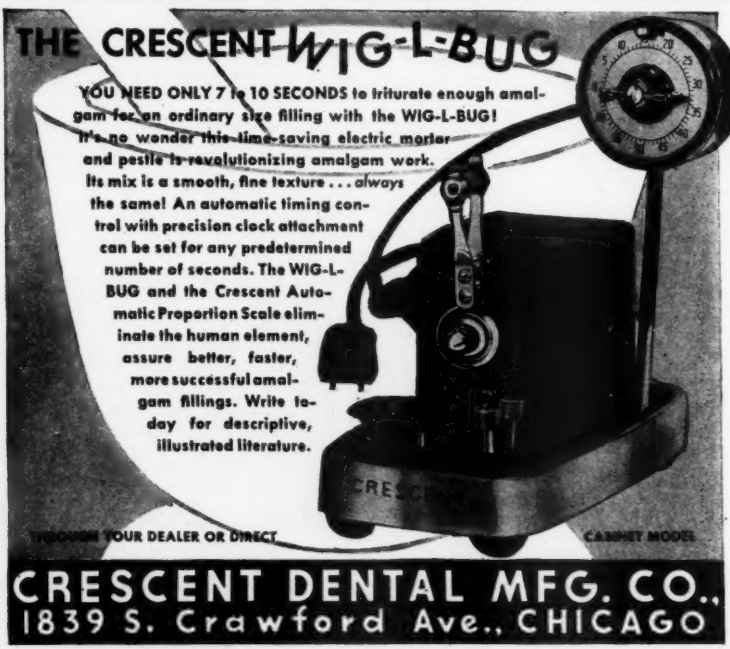
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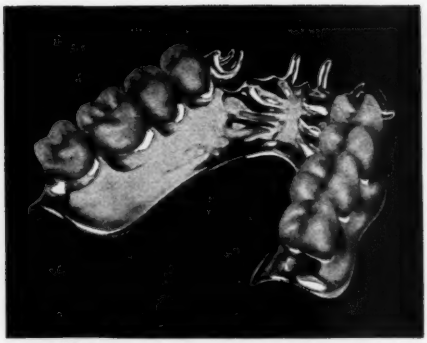

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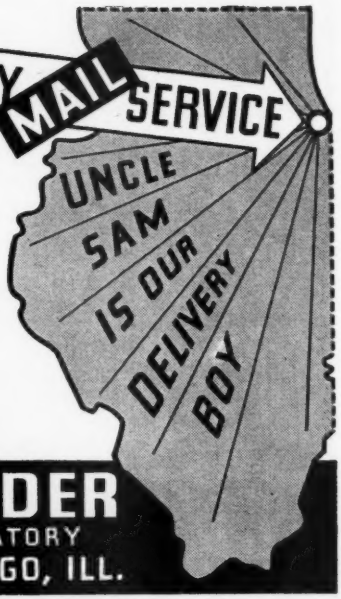

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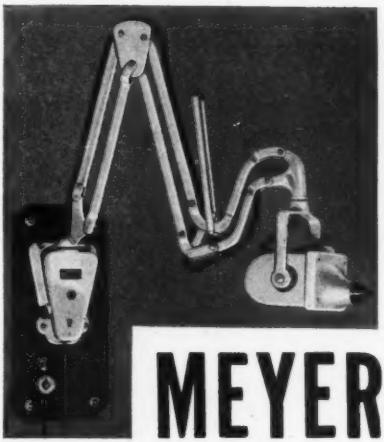

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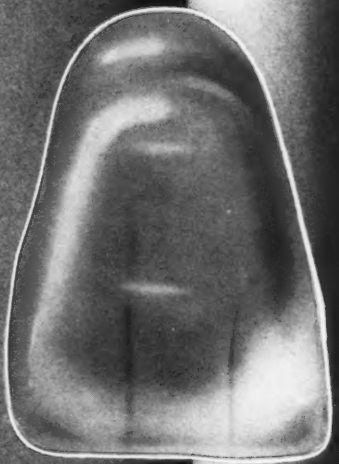

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